

Termination of Service within 7 days.

[Extracts from the Standards of Quality of Service of Basic Telephone Service (Wireline) and Cellular Mobile Telephone Service Regulations 2009 (7 of 2009) dated 20.3.09]

1. Purpose of laying down of QoS Regulation:

- i. to create conditions for consumer satisfaction by making known the quality of service, which the service provider is required to provide, and the user has a right to expect.
- ii. to measure the Quality of Service provided by the Service Providers from time to time and to compare them with the norms so as to assess the level of performance.
- iii. to generally protect the interests of consumers of telecommunication services.

2. QoS Parameters and Benchmarks for Basic Telephone Service (Wire Line)

Name of the Parameter	Benchmark
Fault repair by next working day	≥ 90%
Fault repair within 3 days	100%
Rebate for fault pending between >3 to ≤ 7 days	Rent rebate for 7 days
Rebate for fault pending between >7 to ≤ 15 days	Rent rebate for 15 days
Rebate for faults pending for more than 15 days	Rent rebate for 1 month
Resolution of billing/ charging complaints	100% within 4 weeks
Shifts	≤ 3 days (95% of request to be attended with 3 days)
Termination/Closure of service	≤ 7days
Time for Refund of deposits after closure	100% within 60 days

3. QoS Parameters and Benchmarks for Cellular Mobile Telephone Service

Name of the Parameter	Benchmark
Resolution of billing/ charging complaints	100% within 4 weeks
Time taken for refund after closure	All cases of refund of deposits to be made within sixty days after closure.
Termination/Closure of service	≤ 7days

[For more information refer to [The Standards of Quality of Service of Basic Telephone Service \(Wireline\) and Cellular Mobile Telephone Service Regulations, 2009](#)]

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TELECOM REGULATORY AUTHORITY OF INDIA

NOTIFICATION

NEW DELHI, THE 20th MARCH, 2009

THE STANDARDS OF QUALITY OF SERVICE OF BASIC TELEPHONE SERVICE (WIRELINER) AND CELLULAR MOBILE TELEPHONE SERVICE REGULATIONS, 2009 (7 OF 2009)

F. No. 305-25/2008-QoS .----- In exercise of the powers conferred upon it under section 36, read with sub-clauses (i) and (v) of clause (b) of sub-section (1) of section 11 of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations, namely: -

SECTION I PRELIMINARY

1. Short title, commencement and application.--- (1) These regulations may be called the Standards of Quality of Service of Basic Telephone Service (wireline) and Cellular Mobile Telephone Service Regulations, 2009.

(2) They shall come into force with effect from the 1st day of July, 2009.

(3) These regulations shall apply to ----

all service providers [including Bharat Sanchar Nigam Limited and Mahanagar Telephone Nigam Limited, being the companies registered under the Companies Act, 1956 (1 of 1956)] providing,--

- (i) Basic Telephone Service;
- (ii) Unified Access Services;
- (iii) Cellular Mobile Telephone Service;

2. Definitions.— (1) In these regulations, unless the context otherwise requires,-

- (a) **“Act”** means the Telecom Regulatory Authority of India Act, 1997 (24 of 1997);
- (b) **“Authority”** means the Telecom Regulatory Authority of India established under sub-section (1) of section 3 of the Act;
- (c) **“Basic Telephone Service”** covers collection, carriage, transmission and delivery of voice or non-voice messages over licensee’s Public Switched Telephone Network in licensed service area and includes provision of all types of services except those requiring a separate licence;
- (d) **“Cell”** means the radio frequency coverage area of a site in radio access network which is part of a cellular mobile telephone network and ---
- (i) in case it is an omni-site, it is synonymous with the site; and
- (ii) at a sectored site, it is synonymous with the sector;
- (e) **“Cell Bouncing Busy Hour”** means the one hour period in a day during which a cell in a cellular mobile telephone network experiences the maximum traffic;
- (f) **“Cellular Mobile Telephone Service”** -
- (i) means telecommunication service provided by means of a telecommunication system for the conveyance of messages through the agency of wireless telegraphy where every message that is conveyed thereby has been, or is to be, conveyed by means of a telecommunication system which is designed or adapted to be capable of being used while in motion;
- (ii) refers to transmission of voice or non-voice messages over Licensee’s Network in real time only but service does not cover broadcasting of any messages, voice or non-voice, however, Cell Broadcast is permitted only to the subscribers of the service;
- (iii) in respect of which the subscriber (all types, pre-paid as well as post-paid) has to be registered and authenticated at the network point of registration and approved numbering plan shall be applicable;
- (iv) includes both Global System for Mobile Communications (GSM) and Code Division Multiple Access (CDMA) Technology;
- (g) **“Call Centre”** means a department or a section or a facility established by the service provider under regulation 3 of the Telecom Consumers Protection and Redressal Grievances Regulations, 2007 (3 of 2007);
- (h) **“consumer”** means a consumer of a service provider falling in sub-regulation (3) of regulation 1 and includes its customer and subscriber ;
- (i) **“licence”** means a licence granted or having effect as if granted under section 4 of the Indian Telegraph Act, 1885 (13 of 1885) or the provisions of

the Indian Wireless Telegraphy Act, 1933 (17 of 1933);

(j) “**licensee**” means any person licensed under sub-section (1) of section 4 of the Indian Telegraph Act, 1885 (13 of 1885) for providing specified public telecommunication services;

(k) “**message**” shall have the same meaning assigned to it in clause (3) of section 3 of the Indian Telegraph Act, 1885 (13 of 1885);

(l) “**MTTR**” means Mean Time to Repair;

(m) “**OMC**” means Operation and Maintenance Centre;

(n) “**Paging Channel**” means a signaling control channel in a CDMA network to send control, call setup and paging messages used for communication between mobile station (MS), i.e., mobile handset and Base Transceiver Station (BTS) before such mobile station is assigned a Traffic Channel (TCH);

(o) “**Point of Interconnection (POI)**” means a mutually agreed upon point of demarcation where the exchange of traffic between the networks of two service providers takes place;

(p) “**Public Switched Telephone Network**” means a fixed specified switched public telephone network providing a two-way switched telecommunication services to the general public;

(q) “**Public Land Mobile Network**” means a network set up and operated by any of the licensed operators including Mahanagar Telephone Nigam Limited and Bharat Sanchar Nigam Limited, for the purpose of providing land based mobile communication services to the public and which provides communication facilities to subscribers using mobile stations (MS), i.e., mobile handsets;

(r) “**Quality of Service**” is the main indicator of the performance of a telecommunication network and of the degree to which such network conforms to the standards of such quality of service as specified in these regulations for specified parameters;

(s) “**regulations**” means the Standards of Quality of Service of Basic Telephone Service (wireline) and Cellular Mobile Telephone Service Regulations, 2009;

(t) “**Stand-alone Dedicated Control Channel**” or “**SDCCH**” means, a GSM control channel for signaling purposes where the majority of call setup occurs, which is used for communication between mobile station (MS), i.e., mobile handset and Base Transceiver Station (BTS) before such mobile station is assigned a Traffic Channel (TCH);

(u) “**service provider**” means any service provider to which these

regulations apply.

(v) **“Traffic Channel”** or **“TCH”** means, a logical channel in a GSM or CDMA network which carries either encoded speech or user data;

(w) **“telecommunication services”** means service of any description (including electronic mail, voice mail, data services, audio-tex services, video-tex services, radio paging and cellular mobile telephone services) which is made available to users by means of any transmission or reception of signs, signals, writing images, and sounds or intelligence of any nature, by wire, radio, visual or other electro- magnetic means but shall not include broadcasting services;

(x) **“Time Consistent Busy Hour”** or **“TCBH”** means the one hour period starting at the same time each day for which the average traffic of the resource group concerned is greatest over the days under consideration and such Time Consistent Busy Hour shall be established on the basis of analysis of traffic data for a period of ninety days;

(y) **“Unified Access Services”** -

(i) means telecommunication service provided by means of a telecommunication system for the conveyance of messages through the agency of wired or wireless telegraphy ;

(ii) refers to transmission of voice or non-voice messages over Licensee’s Network in real time only but service does not cover broadcasting of any messages, voice or non-voice, except, Cell Broadcast which is permitted only to the subscribers of the service;

(iii) in respect of which the subscriber (all types, pre-paid as well as post-paid) has to be registered and authenticated at the network point of registration and approved numbering plan shall be applicable;

(2) Words and expressions used but not defined in these regulations and defined in the Act and the rules and other regulations made thereunder shall have the meanings respectively assigned to them in the Act or the rules or the regulations, as the case may be.

SECTION II

QUALITY OF SERVICE (QoS) PARAMETERS FOR BASIC TELEPHONE SERVICE (WIRE LINE)

3. Quality of Service Parameters in respect of which compliance reports are to be submitted to the Authority.- (1) Every basic telephone service provider shall meet the following Quality of Service benchmarks for the basic telephone service (wireline) in respect of each specified parameter, namely:-

Serial Number	Name of Parameter	Benchmark	Averaged over a period
(i)	Fault incidences (No. of faults/ 100 subscribers /month)	≤ 5	One Quarter
(ii)	Fault repair by next working day	<p>For urban areas: By next working day: ≥ 90% and within 3 days: 100%.</p> <p>For rural and hilly areas: By next working day: ≥ 90% and within 5 days: 100%.</p> <p>Rent Rebate Faults pending for >3 days and ≤7 days: Rent rebate for 7 days. Faults pending for >7 days and ≤15 days: Rent rebate for 15 days. Faults pending for >15 days: rent rebate for one month.</p>	One Quarter
(iii)	Mean Time To Repair (MTTR)	≤ 8 Hrs	One Quarter
(iv)	(a) Call Completion Rate within a local network shall be better than	≥ 55%	One Quarter
	or,		
(iv)	(b) Answer to Seizure Ratio (ASR)	≥ 75 %	One Quarter
(v)	Point of Interconnection (POI) Congestion (on individual POI)	≤ 0.5%	One month
(vi)	Metering and billing credibility – post paid	Not more than 0.1% of bills issued should be disputed over a billing cycle	One Billing Cycle
(vii)	Metering and billing credibility – pre-paid	Not more than 1 complaint per 1000 customers, i.e., 0.1% complaints for metering,	One Quarter

		charging, credit, and validity	
(viii)	Resolution of billing/ charging complaints	100% within 4 weeks	One Quarter
(ix)	Period of applying credit/ waiver/ adjustment to customer's account from the date of resolution of complaints	within 1 week of resolution of complaint	One Quarter
(x)	Response Time to the customer for assistance		
	(a) Accessibility of call centre/ customer care	≥ 95%	One Quarter
	(b) Percentage of calls answered by the operators (voice to voice) within 60 seconds	≥ 90%	One Quarter
(xi)	Termination/ closure of service	≤ 7 days	One Quarter
(xii)	Time taken for refund of deposits after closures	100% within 60 days.	One Quarter

(2) The compliance of the parameters specified in sub-regulation (1) shall be reported to the Authority by the service provider.

(3) The Authority may, from time to time, through audit and objective assessment of quality of service conducted either by its own officers or employees or through an agency appointed by it, verify and assess the performance by the basic telephone service provider of the Quality of Service benchmarks of each parameter for the basic telephone service (wireline) specified in sub-regulation (1).

4. Quality of Service parameters in respect of which compliance is to be monitored by the service provider.-(1) Every basic telephone service provider shall meet and monitor the following Quality of Service benchmarks for the basic telephone service (wireline) in respect of each specified parameter, namely:-

Serial Number	Name of Parameter	Benchmark	Averaged over a period
(i)	Provision of a telephone after registration of	100% in ≤ 7 days (subject to technical feasibility)	One quarter

	registration of demand		
(ii)	Shift of Telephone Connection	≤ 3 days (95% of requests to be attended within 3 days)	One quarter
(iii)	Grade of Service	(a) Junctions between local exchanges – 0.002 (b) Outgoing junctions from Trunk Automatic Exchange (TAX) to local exchange – 0.005 (c) Incoming junctions from local exchange to TAX – 0.005 (d) Incoming or out going junctions between TAX's 0.005 (e) Switching network should be non-blocking or should have extremely low blocking probability.	One quarter

(2) The compliance of the Quality of Service benchmarks of each parameter for the basic telephone service (wireline) specified in sub-regulation (1) which are required to be monitored by the concerned service provider, need not be reported to the Authority.

(3) The basic telephone service provider shall maintain records of its compliance of the Quality of Service benchmarks of each parameter for the basic telephone service (wireline) specified in sub-regulation (1).

(4) The Authority may, if it considers it expedient so to do, and to ensure compliance of the provisions of sub-regulation (1), at any time, ---

(a) direct any of its officers or employees or an agency appointed by the Authority to inspect the records maintained under sub-regulation (3); or,

(b) get the records maintained under sub-regulation (3) audited.

SECTION III

QUALITY OF SERVICE (QoS) PARAMETERS FOR CELLULAR MOBILE TELEPHONE SERVICE

5. Quality of Service parameters in respect of which compliance reports are to be submitted to the Authority.-(1) Every cellular mobile telephone service provider shall meet the following Quality of Service benchmarks for cellular mobile telephone service in respect of each specified parameter, namely:-

Serial Number	Name of Parameter	Benchmark	Averaged over a period
A	Network Service Quality Parameters:		
(i)	Network Availability		
	(a) BTSs Accumulated downtime (not available for service)	$\leq 2\%$	One Month
	(b) Worst affected BTSs due to downtime	$\leq 2\%$	One Month
(ii)	Connection Establishment (Accessibility)		
	(a) Call Set-up Success Rate (within licensee's own network)	$\geq 95\%$	One Month
	(b) SDCCH/ Paging Channel Congestion	$\leq 1\%$	One Month
	(c) TCH Congestion	$\leq 2\%$	One Month
(iii)	Connection Maintenance (Retainability)		
	(a) Call Drop Rate	$\leq 2\%$	One Month
	(b) Worst affected cells having more than 3% TCH drop (call drop) rate	$\leq 5\%$ upto 31.03.2011 $\leq 3\%$ From 01.04.2011	One Month
	(c) connections with good voice quality	$\geq 95\%$	One Month
(iv)	Point of Interconnection (POI) Congestion (on individual POI)	$\leq 0.5\%$	One Month
B	Customer Service Quality Parameters:		
(v)	Metering and billing credibility – post paid	Not more than 0.1% of bills issued should be disputed over a billing cycle	One Billing Cycle
(vi)	Metering and billing credibility – pre-paid	Not more than 1 complaint per 1000 customers i.e. 0.1% complaints for metering, charging, credit, and validity	One Quarter

(vii)	(a) Resolution of billing/ charging complaints	100% within 4 weeks	One Quarter
	(b) Period of applying credit/ waiver/ adjustment to customer's account from the date of resolution of complaints	within 1 week of resolution of complaint	One Quarter
(viii)	Response Time to the customer for assistance		
	(a) Accessibility of call centre/ customer care	≥ 95%	One Quarter
	(b) Percentage of calls answered by the operators (voice to voice) within 60 seconds	≥ 90%	One Quarter
(ix)	Termination/ closure of service	≤ 7 days	One Quarter
(x)	Time taken for refund of deposits after closures	100% within 60 days	One Quarter

(2) The compliance of the parameters specified in sub-regulation (1) shall be reported to the Authority by the service provider.

(3) The Authority may, from time to time, through audit and objective assessment of quality of service conducted either by its own officers or employees or through an agency appointed by it, verify and assess the performance by the cellular mobile telephone service provider of the Quality of Service benchmarks of each parameter for the cellular mobile telephone service specified in sub-regulation (1).

6. Quality of Service parameter in respect of which compliance is to be monitored by the service provider.(1) Every cellular mobile telephone service provider shall meet and monitor the following Quality of Service benchmarks for cellular mobile telephone service in respect of the specified parameter, namely:-

Serial Number	Name of Parameter	Benchmark
1	Service Coverage	For In-door coverage the signal strength at street level shall be ≥ -75 dBm and In-vehicle shall be ≥ -85 dBm.

(2) The compliance of the Quality of Service benchmarks of the parameter for the cellular mobile telephone service specified in sub-regulation (1) need not be reported to the Authority.

- (3) The service provider shall,....
- (a) measure the service coverage through drive tests of the cellular mobile telephone network at periodic intervals and take remedial action to address problems related to coverage including interference, call drop and voice quality revealed during such drive tests;
 - (b) maintain the records of such drive tests and the action taken on the problems related to coverage including interference, call drop and voice quality revealed during such drive tests; and
 - (c) provide to the Authority or its authorized agency or representative, on demand, for verification, the records maintained as per clause (b) above.
- (4) The Authority may, through drive tests of the cellular mobile telephone network conducted either by its own officers or employees or through an agency appointed by it or through joint drive tests with the service provider, assess the quality of the service coverage, and the service provider shall facilitate such drive tests.
- (5) The service provider shall, suo motu, take all remedial action to rectify shortcomings or deficiencies, if any, detected during the joint drive tests referred to in sub-regulation (4) without waiting for any communication from the Authority and submit to the Authority ----
- (a) its action plan, within thirty days of such drive tests, for remedying the shortcomings or deficiencies; and
 - (b) its final compliance report within such time limit as indicated in the action plan or such reduced time limit as may be indicated by the Authority in response to the action plan of the service provider referred to in clause (a), as the case may be.
- (6) In respect of a drive test conducted by the Authority under sub-regulation (4) either by its own officers or employees or through an agency appointed by it, the service provider shall submit to the Authority -----
- (a) its action plan for removal of the shortcomings or deficiencies, within thirty days of receipt by it of the communication from the Authority about such shortcomings or deficiencies based on such drive test; and
 - (b) its final compliance report within such time limit as indicated in the action plan or such reduced time limit as may be indicated by the Authority in response to the action plan of the service provider referred to in clause (a), as the case may be.
- (7) The Authority may, if it considers it expedient so to do, and to ensure compliance of the provisions of sub-regulation (1), at any time, ---
- (a) direct any of its officers or employees or an agency appointed by the Authority to inspect the records maintained under sub-regulation (3); or,
 - (b) get the records maintained under sub-regulation (3) audited.

SECTION IV

CUSTOMER PERCEPTION OF SERVICE FOR BASIC TELEPHONE SERVICE (WIRELINER) AND CELLULAR MOBILE TELEPHONE SERVICE

7. Quality of Service parameters to be reflected in customer perception of service..... The performance of the service providers in respect of the following Quality of Service benchmarks for the basic telephone service (wireline) or cellular mobile telephone service or both, as the case may be, in respect of each specified parameter, shall be subject to periodic assessment by the authority through customer satisfaction surveys, which may be conducted by the Authority either through its own officers or employees or through any agency appointed by it, namely :-

Serial Number	Name of Parameter	Benchmark
(a)	customers satisfied with the provision of service	≥ 90 %
(b)	customers satisfied with the billing performance	≥ 95 %
(c)	customers satisfied with network performance, reliability and availability	≥ 95 %
(d)	customers satisfied with maintainability	≥ 95 %
(e)	customers satisfied with supplementary and value added services	≥ 90 %
(f)	customers satisfied with help services including customer grievance redressal	≥ 90 %
(g)	customers satisfied with overall service quality	≥ 90 %

SECTION V

RECORD KEEPING, REPORTING AND PUBLICATION OF QUALITY OF SERVICE PERFORMANCE

8. Record Keeping.....(1) Every service provider shall maintain documented process of collection of data for each Quality of Service parameter specified by the Authority in regulation 3, regulation 4, regulation 5 and regulation 6 and submit to the Authority, within sixty days of notification of these regulations, the documented process of collection of data of each Quality of Service parameter, indicating the correlation with the primary data which are derived from system counters or codes in Operation and Maintenance Centre or Network Management System or Mobile Switching Centre or telephone exchange, along with

record keeping procedure.

(2) Every service provider shall maintain complete and accurate records of its compliance of benchmark of each Quality of Service parameter specified in regulations 3, regulation 4, regulation 5 and regulation 6 in such manner and in such formats as may be directed by the Authority, from time to time.

(3) The Authority may, from time to time, either by order or by direction, specify uniform record keeping procedures and formats, including guidelines on measurement methodology for various Quality of Service parameters specified in these regulations, to be followed by the service providers.

(4) The Authority may, if it considers it expedient so to do, and to ensure compliance of the provisions of sub-regulations (2) and (3), at any time, direct any of its officers or employees or an agency appointed by the Authority to inspect the records maintained under sub-regulations (2) and (3) or to get such records audited.

(5) The Authority may, if it considers it expedient so to do, require the concerned service provider to get the records maintained by it under sub-regulations (2) and (3) audited through an agency as may be specified by the Authority and submit the report in respect of such audit to the Authority and the cost of such audit shall be borne by the concerned service provider.

9. Reporting.....Every service provider shall submit to the Authority its compliance reports of benchmarks in respect of each Quality of Service parameter specified under regulation 3 and regulation 5 in such manner and format, at such periodic intervals and within such time limit as may be specified by the Authority, from time to time, by an order or direction.

10. Publication.....(1) The Authority may publish, in such manner and in such format, as may be decided by the Authority from time to time -----

(a) the compliance reports of benchmarks of each Quality of Service parameter reported to it by the service providers in accordance with regulation 9;

(b) the results of the audit and objective assessment of Quality of Service undertaken by the Authority or its authorised agency as per sub-regulation (3) of regulation 3 , sub-regulation (3) of regulation 5 and sub-regulations (4) and (5) of regulation 8; and

(c) the results of the customer satisfaction surveys undertaken by the Authority as per regulation 7 -----

through its website or through press releases or through advertisements in the newspapers, for the information of the general public.

(2) Every service provider shall publish, for the information of the

consumers, its performance with respect to the benchmark of Quality of Service parameter specified in regulation 3, regulation 4, regulation 5 and regulation 6, in such manner and in such format, as may be directed by the Authority from time to time.

11. Review..... (1) The Quality of Service parameters specified in regulation 3, regulation 4, regulation 5, regulation 6 and regulation 7 may be reviewed by the Authority from time to time.

(2) The Authority, on reference from any affected party for good and sufficient reasons, may review and modify these regulations.

12. Over-riding Effect Wherever higher quality parameter has been stipulated as a condition of licence, the Quality of Service as required by the licence shall have precedence over the parameters specified in these regulations.

13. Repeal and Saving.....(1) The Regulation on Quality of Service of Basic and Cellular Mobile Telephone Services, 2005 (11 of 2005) is hereby repealed.

(2) Notwithstanding such repeal, anything done or any action taken under the said Regulation shall be deemed to have been done or taken under the corresponding provisions of these regulations.

14. Interpretation..... In case of any doubt regarding interpretation of any of the provisions of these regulations, the clarification of the Authority shall be final and binding.

(R.K. Arnold)
Secretary

Note – The Explanatory Memorandum explains the objects and reasons including measurement methodology for various Quality of Service parameters of the “ Standards of Quality of Service of Basic Telephone Service (wireline) and Cellular Mobile Telephone Service Regulations, 2009 (7 of 2009)”.

Explanatory Memorandum to the “Standards of Quality of Service of Basic Telephone Service (Wireline) and Cellular Mobile Telephone Service Regulations, 2009” (7 of 2009) dated the 20th March, 2009

1. BACKGROUND:

1.1 Sub-clause (v) of clause (b) of sub-section (1) of section 11 of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997) mandates the Authority to “lay down the standards of quality of service to be provided by the service providers and ensure the quality of service and conduct the periodical survey of such service provided by the service providers so as to protect interest of the consumers of telecommunication services”. In the discharge of these functions and in order to,.....

- (i) create conditions for customer satisfaction by making known the quality of service which the service provider is required to provide and the user has a right to expect;
- (ii) measure the Quality of Service provided by the Service Providers from time to time and to compare them with the benchmarks so as to assess the level of performance; and
- (iii) to generally protect the interests of consumers of telecommunication services,

the Authority, in exercise of its functions under the above provisions in the TRAI Act, had notified the “Regulation on Quality of Services (QoS) of Basic and Cellular Mobile Telephone Services, 2000” vide Notification dated 5th of July, 2000. The benchmarks for these QoS parameters were to be achieved in three stages viz. (i) in the short term before the end of 12 months, (ii) in the medium term before the end of 24 months; and (iii) in the long term of 36 months for cellular and 48 months for basic service operators.

1.2 The Quality of Service (QoS) standards in the above regulation were reviewed in 2005, keeping in view the performance of service providers against the QoS standards, the international standards on QoS and utility of the laid down QoS parameters. Based on the review of QoS standards undertaken by the Authority in 2005, the QoS standards were revised and the revised QoS standards for Basic Service (Wireline) and Basic Service (Wireless) & Cellular Mobile Telephone Service were issued by the Authority on 1st July, 2005. In these regulations the parameters for basic service (wireless) and Cellular Mobile Telephone Service were combined as the Quality of Service aspects associated with wireless medium is common for both the services.

1.3 TRAI has been monitoring the Quality of Service (QoS) of basic service (wireline) and cellular mobile telephone service vis-a-vis the QoS parameters laid down vide TRAI’s ‘Regulation on Quality of Services of Basic and Cellular Mobile Telephone Services, 2005 (11 of 2005). The experience gained over the last three years in implementing the QoS

Regulation has revealed the necessity for deletion of some parameters as they are no longer relevant in the present competitive scenario. However, some of the performance parameters may be required to be monitored by the service providers and there are some key performances parameters for which benchmarks are specified and service providers will have to report its compliance. Further, a need has arisen to define each parameter extensively and also to explain the measurement methodology for each parameter so that uniform practice is adopted by all the service providers for measuring, recording and auditing of such performance parameters. In achieving the quality of service, service providers have to continuously plan, upgrade, augment capacity and ensure customer care provisioning. This process involves:

- network design and expansion as per the projected traffic/consumer base
- reliability of various network elements
- continuous monitoring of network and augmentation/optimization
- service repair and service level management of all existing and new customers and ensure that with enrolment of new customers existing customer do not face deterioration in the quality of service

1.4 In the present scenario the customers do not have adequate information about the Quality of Service being provided by various service providers and therefore, publication of such information for information of consumers has also become necessary. The Authority, therefore, decided to review the existing quality of service parameters. Customer satisfaction is the major determining factor in the emergence of new services, setting standards and designing of networks. Therefore, the customer requirements and expectations have been given paramount considerations while reviewing Quality of service standards. There was also a case to consider the new inputs from the service provider during this review.

1.5 The Authority had undertaken public consultation by releasing a consultation paper on 18th December, 2008 and comments of stakeholders were sought by 2nd February, 2009. Open House Discussion with the stakeholders was held at Delhi on 24th February, 2009.

1.6 The Authority received comments from 23 stakeholders viz Association of Unified Telecom Service Providers of India (AUSPI), Cellular Operators Association of India (COAI), Sistema Shyam Teleservices (Sistema), Bharti Airtel Ltd.(Bharti), Bharat Sanchar Nigam Limited (BSNL), Reliance Communication Limited (RCOM), Tata Teleservices Limited (TTSL), Mahanagar Telephone Nigam Limited (MTNL), Surya Foundation (Surya), Voluntary Organization in Interest of Consumers Education (VOICE), National Centre for Human Settlement & Environment (NCHSE), Bharat Jyoti, Federation of Consumer and

Service Organizations (FCSO), Kerala Consumers Service Society (KCSS), Consumer Forum (CF), Consumer Protection Association (CPA), Upbhokta Sanrankchhan & Kalyan Samiti (US&KS), Sasken Communication Technologies (Sasken), Nielsen Telecom Practice Group (Nielsen), Market Pulse, Mr. Parijat Garg, Mr. Ravi Dhameja and Mr. Joglekar.

1.7 The Authority considered the comments received from stakeholders during the consultation process while finalizing the quality of service parameters and benchmarks for basic telephone service (wireline) and cellular mobile telephone service. The meaning of the various parameters, its measurement methodology, comments of the stakeholders and rationale for the quality of service benchmark are discussed briefly hereinafter. For the sake of clarity, the comments of the stakeholders are given in the *italic font* followed by the analysis and consideration of the Authority.

2. **Regulating Quality of Service:**

2.1 The comments of the stakeholders are summarized in para (a) to (i) and analysed in the paragraphs following thereafter.

(a) The Authority may, keeping in view the competitive market environment and the implementation of mobile number portability, adopt the encouragement policy and limit itself to the monitoring and making appropriate information available for the consumers.

(b) As the competition increases and market evolves, TRAI should progressively reduce the QoS parameters.

(c) Appreciate the efforts being made by TRAI in the direction of improving the quality of Customer service.

(d) The Authority may setup a minimalist set of QoS parameter.

(e) Some aspects such as spectrum shortage, regular availability of power supply, and steady supply / availability of human resources particularly in rural areas may also be considered as these aspects directly affect the QoS compliance costs and achievement of specified parameters.

(f) The extent of regulatory intervention to specify the QoS benchmarks should depend on the competitive scenario of the market. The best regulatory approaches should be examined and the policies which best suit our requirements adopted.

(g) The review was needed and is most timely.

(h) All the Service Providers are racing in marketing their products without considering the safety to the Consumers therefore, TRAI's first and foremost priority should be to ensure harmless and peaceful service to the Consumers.

(i) TRAI should be empowered to take any action against the defaulting service providers by way of imposing fines etc.

2.2 The Authority considered the above suggestions of the stakeholders and is of the view that the time is still not ripe for leaving the Quality of Service to be addressed through competition. From the experience gained during the last three years of implementation of the Quality of Service Regulations, 2005, the Authority feels that regulatory intervention for enforcing Quality of Service is necessary. However, the Authority during review of the Quality of Service parameters has decided to either delete or to remove some of the parameters which have not much relevance in the competitive scenario from mandatory compliance and reporting. At the same time, keeping in view the interest of consumers, the Authority has introduced some new parameters and the benchmarks for some of the parameters have been made more stringent. The Authority has also decided to make provisions for excluding the performance during force majeure conditions such as natural calamities, fire etc. while computing the performance against the quality of service benchmarks. The various quality of service parameters are discussed below:

3. Quality of Service Parameters for Basic Telephone Service (Wireline)

3.1 Provision of a telephone after registration of demand:

3.1.1 As per the existing Quality of Service Regulation, the telephone has to be provided within 7 days in all areas where telephone is available on demand, subject to technical feasibility. In the consultation paper it was proposed that this parameters may be prescribed for monitoring purposes by the service providers only and need not be reported to TRAI. The comments of the stakeholders are summarized in para (a) to (h) and analysed in the paragraph following thereafter.

- (a) Agreed with the proposal.*
- (b) The period of delay may be excluded from monitoring if fault is at the end of customer. Right of Way should be established for all service providers.*
- (c) The parameter should be continued as this address the concerns of an ordinary telephone user.*
- (d) Do not agree, the parameter should continue, as it is essential for the rural consumers, However, a separate benchmark of 30 or 40days may be fixed.*
- (e) The time limit should be determined for new connection maximum 7 to 10 days.*
- (f) The existing procedure may continue.*
- (g) No comments.*

- (h) *Difficult to achieve the benchmark due to cable breakdown or due to rain or due to subscriber reason and therefore, such cases be exempted from reporting to TRAI.*

3.1.2 The service providers are in favour of removing this parameter from mandatory compliance and reporting to TRAI and also excluding delays on account of conditions not within their control for monitoring this parameter. However, the consumer organizations are in favour of continuing with this parameter with a more relaxed benchmark. The Authority feels that in this era of competition and churn of landline subscribers to mobile connections, it is in the interest of service providers offering wireline connections to provide new connections at the earliest and intervention of the Authority in regulating this parameter may not be appropriate. Hence, the Authority has decided to remove this parameter from mandatory compliance and not to be reported to the Authority. The service providers shall monitor the performance and provide in an appropriate manner the information in this regard to consumers. The benchmark for such monitoring purposes shall continue to be “provisioning of telephone within 7 days (subject to technical feasibility)” of registration for new telephone connection.

3.2 **Fault incidence (No. of faults/100 subs/month):**

3.2.1 In the consultation paper it was posed for consultation whether the existing benchmark for this parameter should be retained or not. The comments of the stakeholders are summarized in para (a) to (g) and analysed in the paragraph following thereafter.

- (a) *This parameter may be identified for the future growth of Subscribers base and quality control.*
- (b) *The existing parameter should continue.*
- (c) *There is a need to modify the benchmark from <3 to <5.*
- (d) *Fault due to customer’s internal wiring may also be excluded.*
- (e) *Parameter should be reported city wise.*
- (f) *No comments.*
- (g) *In some cases it is difficult to achieve the value of <3 and such cases be exempted from reporting to TRAI.*

3.2.2 Most of the service providers have not commented on this parameter. Some of the service providers, who are providing basic service, have suggested that the benchmark may be modified from <3 to <5. From the monitoring of performance of service providers against this benchmark it is seen that more than 40% of service providers are not meeting the benchmark and in the case of these operators their performance is around 5. In rainy seasons the number of fault incidences tends to be high due to cable faults, moisture etc. In urban areas and metro cities lot of construction activities are going on and due to this

frequent cable cuts occur and large number of telephone lines get affected. Considering the above, the Authority has decided to modify the benchmark for this parameter to ≤ 5 .

3.2.3 Measurement

Fault incidences – No. of faults/100 subscriber/month =

$$\frac{\text{Total number of faults in the Quarter (3 months)}}{\text{Total No. of DELs at the end of the Quarter}} \times \frac{100}{3}$$

3.3 Fault Repair by next working day:

3.3.1 In the consultation paper it was proposed to continue the parameter with the existing benchmark and also to clarify the calculation of rent rebate. The comments of the stakeholders are summarized in para (a) to (f) and analysed in the paragraph following thereafter.

- (a) *Agreed with the proposal.*
- (b) *Delay at customer' s end, Building owner or Society objections, cable thefts, power outages, and RoW issues should be allowed to be excluded for calculation.*
- (c) *The occurrence of faults are more due to overhead cables in rural and hilly areas therefore, parameter may be modified as under:*

<i>Fault repair by next working day</i>	<i>90%</i>
<i>Fault repair within 3 days</i>	<i>95%</i>
<i>Fault repair within 5 days</i>	<i>100%.</i>
- (d) *Normal fault of wireline complaint should be attended within minimum 2 to 5 hrs.*
- (e) *No comments.*
- (f) *It is difficult to achieve the value of 90% in certain cases and such cases be exempted from reporting to TRAI and also the figure be modified to 80% and 100% within 7 days instead of 3 days. Also rent rebate may be prescribed where fault is pending more than 7 days.*

3.3.2 Most of the service providers have agreed to the proposal to continue with the existing benchmark for this parameter. However, they have suggested exclusion of certain factors for calculation purpose. Some of the service providers have suggested different benchmarks for fault repair in rural and hilly areas. Considering the fact that most of the service providers have agreed with the proposal to continue with the existing benchmark for the parameter, the Authority has decided to continue with the existing benchmark for the parameter. However, force

majeure incidences could be excluded for calculation purposes. Regarding fault repair in rural and hilly areas, the Authority appreciates that in such areas the fault repairing could take more time due to topology of the area and other constraints. Considering these, the Authority has prescribed modified benchmark for rural and hilly areas. However, the rent rebate will continue to be uniform for urban and rural/hilly areas. In the parameter “fault repair by next working day”, only those complaints, which have been registered till the close of the business hours of that day, will be taken into account. Complaints registered after the business hours will be taken as being registered in the next day business hours.

3.4 Mean Time to Repair:

3.4.1 In the consultation paper no change in the benchmark for this parameter was proposed. The comments of the stakeholders are summarized in para (a) to (f) and analysed in the paragraph following thereafter.

- (a) *Agreed with the proposal. However, delay at customer’s end, Building owner or Society objections, cable thefts, power outages, and RoW issues should be allowed to be excluded for calculation.*
- (b) *Hand set related complaints should be excluded.*
- (c) *The duration should be from the time of the complaint till the time to repair of the fault, excluding non working hours (6 PM to 8 AM) and Holidays.*
- (d) *This parameter may be modified as MTTR < 9 hrs.*
- (e) *No comments.*
- (f) *Revise the benchmark to 15 hours.*

3.4.2 Most of the service providers agreed with the proposal to continue with the existing benchmark for this parameter. As such, the Authority is of the view to continue with the existing benchmark for this parameter. However, force majeure events could be excluded for calculation purposes.

3.4.3 Measurement

Mean Time to Repair =
$$\frac{\text{sum of duration of each repair time in hours for all the fault incidences in a Quarter (3 months)}}{\text{Total number of fault incidences in a Quarter (3 months)}}$$

3.4.4 For counting the duration of repair time only working hours shall be counted. The duration shall be from the time of the complaint till the

time of repair of the fault, excluding non-working hours. Thus only the actual working hours from the time of lodging of the complaint to the time of rectification of the fault shall be taken for computation of performance. For example in case a fault is reported at 3.30 PM on Monday, a working day, and if the fault is rectified at 12.30 PM on Tuesday the duration for repair will be 7 hours, where working hours 8 AM to 6 PM is followed.

3.5 **Grade of Service**

3.5.1 Grade of Service (GoS) is a design parameter of the telephone exchanges for trunk groups. Grade of service basically is used for planning of local and long distance junction network i.e. local exchange to local exchange/tandem and local network to TAX and vice-versa. Similarly, the defined parameters of GoS are used for expansion of network and augmentation of specific circuit group. As per the live traffic measured in erlang during time consistent busy hour or during route busy hour and thereafter taking traffic projections, the service provider has to augment/plan the number of trunk circuits on various traffic destination groups called trunk groups. While projecting the number of circuits for augmentation, the grade of service (GoS) as specified in quality of service regulations or license conditions is to be applied by the service providers. Traffic need to be measured in each destination circuit group generally as per the route busy hour and its augmentation on periodic basis to meet the particular grade of service. Hence, compilation of the data for large number of switches for grade of service could be difficult. Therefore, it was proposed in the consultation paper as to whether this parameter should continue to be specified for mandatory compliance purposes or that it may be specified only for the purpose of designing and augmentation of circuit groups by the telecom service provider as a guideline. The comments of the stakeholders are summarized in para (a) to (f) and analysed in the paragraph following thereafter.

- (a) *There is no need to monitor this parameter as it is difficult to estimate the benchmark.*
- (b) *It should be made "MANDATORY COMPLIANCE".*
- (c) *Grade of Service should be continued.*
- (d) *This parameter can be specified only as a guideline.*
- (e) *Circuit seizure efficiency may be introduced.*
- (f) *No comments.*

3.5.2 While the consumer organizations have suggested continuing the parameter, most of the service providers have suggested that the parameter can be specified only as a guideline. Considering the difficulties in measuring and reporting this parameter, the Authority is of

the view that the Grade of Service is to be prescribed only for monitoring purposes by the service provider and need not be reported to the Authority. However, the service providers shall maintain records thereof. The measurement of this parameter shall be made during Time Consistent Busy Hour.

3.6 Call Completion Rate

3.6.1 Call Completion Rate (CCR) is defined as the ratio of the number of successful calls to the number of call attempts. Not all call attempts result in successful calls i.e. called party answers. A variety of reasons such as called line busy, no answer and congestion in the network as well as subscriber behavior like premature release, wrong dialing etc. are responsible for the failure. Congestion or blocking occurs due to either common control equipment overload condition in the exchange or congestion in the trunk circuit /junction group to handle the calls. Due to the difference in the Network Architecture with various service providers, there is a constraint in the measurement of the local network Call Completion Rate for some of the service providers. M/s Reliance Communications is furnishing the data of the parameter Answer Seizure Ratio (ASR) in place of local Call Completion Rate. “Answer Seizure Ratio” is generally defined as the ratio of calls answered to the calls processed by the switch. It was proposed in the consultation paper as to whether the parameter Call Completion Rate within local network is to be retained or replaced by the parameter Answer to Seizure Ratio (ASR) and if it is replaced by parameter ASR then it is to be considered as to what should be its benchmark.

3.6.2 The comments of the stakeholders are summarized in para (a) and (f) and analysed in the paragraph following thereafter.

- (a) *CCR to be replaced with ASR with international norms.*
- (b) *CCR should be retained.*
- (c) *ASR within network has significance only in the circles where service provider has multiple switches because it can be measured on circuit group only.*
- (d) *ASR does not measure the network capacity or efficiency to convert every call attempt into successful seizure of resources.*
- (e) *To provide leverage Reliance Communications may be allowed ASR.*
- (f) *From consumer angle, CCR is better.*

3.6.3 The Authority considered the above views of stakeholders and is of the view that since CCR cannot be uniformly measured and reported by all service providers, both the parameters Call Completion Rate and Answer to Seizure Ratio should be there. The Authority has also prescribed benchmarks for both the parameters. The service providers who cannot measure and report Call Completion Rate due to constraint

in network architecture shall measure and report their performance on Answer to Seizure Ratio. The measurement shall be made during Time Consistent Busy Hour.

3.6.4 For computation of the performance against the parameter Call Completion Rate within the local network, the local network means calls originating and terminating within the same Short Distance Charging Area (SDCA).

3.7 **Metering and billing credibility:**

3.7.1 In the consultation paper no change in the benchmark for this parameter for post-paid billing was proposed. However, to make the computation of achievement against the benchmark for this parameter more transparent, it was proposed to clarify the various types of incidences relating to billing complaints. It was also proposed to introduce a new parameter on pre-paid charging as there had been complaints relating to charging, including charging not as per tariff plan or application of credit or deduction of charges for the services without explicit consent of customer. The comments of the stakeholders are summarized in para (a) to (f) and analysed in the paragraph following thereafter.

- (a) *Agreed with proposal.*
- (b) *The existing benchmark may continue in both the case i.e. Prepaid / Post paid billing.*
- (c) *There could be reasons like cheque returned, cheque not completed properly or not signed due to which payments are not credited. Many times payment reflects automatically after customers' complaint is accepted. Hence this parameter should not be part of the billing complaints.*
- (d) *Billing complaint needs to include—Bill for service NEVER ACTIVATED or PROVIDED.*
- (e) *Billing complaints per 100 bills issued- Prepaid charging.-The benchmark for billing complaints per 100 bills- pre paid charging should be increased to 3 %.*
- (f) *No Comments.*

3.7.2 Most of the service providers have either not commented on the proposal or agreed with proposal. As such, the Authority has decided to continue with the existing benchmark for the parameter Metering and Billing Credibility – Post paid billing. The types of billing complaints to include could be but is not limited to:-

- (a) payment made and not credited to the subscriber account;
- (b) payment made on time but late payment charges levied wrongly;

- (c) double charges;
- (d) charging for toll free services;
- (e) local call charges billed as STD/ISD or vice versa;
- (f) calls or messages made disputed;
- (g) validity related complaint;
- (h) credit agreed to be given in resolution of complaint but not accounted in the bill;
- (i) charging for services provided without consent;
- (j) charging not as per tariff plan or top-up vouchers/special packs etc.;
- (k) overcharging or undercharging;

In addition to the above, any billing complaint which leads to billing error, waiver, refund, credit or any adjustment shall also be included as valid billing complaint for calculating the number of disputed bills.

3.7.3 The measurement of the parameter “Metering and Billing Credibility – post-paid” is to be done as per the following formula:

$$\text{Billing complaints (\%)} = \frac{\text{total number of disputed bills} \times 100}{\text{total number of bills issued during one billing cycle.}}$$

3.7.4 The measurement of the parameter “Metering and Billing Credibility – pre-paid” is to be done as per the following formula:

$$\text{Pre-paid charging complaints (\%)} = \frac{\text{total number of complaints relating to Charging, credit \& validity during quarter} \times 100}{\text{total number of pre-paid customers at the end of the quarter}}$$

3.8 Resolution of billing/charging complaints:

3.8.1 In the Consultation Paper it was proposed to introduce this parameter for basic telephone service (wireline) also. The comments of the stakeholders are summarized in para (a) to (c) and analysed in the paragraph following thereafter.

- (a) *Agreed with the proposal. Monitoring of this parameter will help the service provider in collection of dues and also avoidable bad debts.*
- (b) *Billing correction contain minimum one working hour.*
- (c) *No comments.*

3.8.2 Most of the service providers have either agreed with the proposal or have not commented on the proposal. The monitoring of this parameter will help the service provider in collection of dues and also avoidable bad debts. This will also help to increase the customer

satisfaction. As such, the Authority has decided to prescribe the benchmark of 100% within 4 weeks of receiving complaints.

3.8.3 The performance against this parameter is to be measured as per the following formula:

%age of billing complaints (for post-paid customers)/ charging, credit & validity (for pre-paid customers) resolved within 4 weeks =

$$\frac{\text{number of billing complaints for post-paid customers/charging, credit/ validity complaints for pre-paid customers resolved within 4 weeks during the quarter}}{\text{number of billing/charging, credit / validity complaints received during the quarter}} \times 100$$

 number of billing/charging, credit / validity complaints received during the quarter

3.9 **Period of all refunds/payments due to customers from the date of resolution of complaints.**

3.9.1 In the consultation paper it was proposed to introduce this parameter for Basic Telephone Service (wireline). The comments of the stakeholders are summarized in para (a) to (c) and analysed in the paragraph following thereafter.

- (a) *Agreed the proposal.*
- (b) *The refund should be made within 7 days instead of 60 days or a penal interest @ 2% per month may be levied.*
- (c) *No comments.*

3.9.2 Most of the service providers and consumer organizations have either agreed with the proposal or have not commented on the proposal. Hence, the Authority has decided that a billing complaint has to be resolved within four weeks and any credit/waiver/adjustment arising out of resolution of that complaint has to be made to the customer's account within one week of resolution of the complaint and intimation thereto the customer, post-paid/pre-paid. Further, in case of post paid customer the same shall also be reflected in the next bill to be issued.

3.10 **Customer care (Promptness in attending to customers request)**

(a) Shift:

3.10.1 In consultation paper it was proposed that the parameter Shift may be taken out of Quality of Service Regulation. The comments of the stakeholders are summarized in para (a) to (c) and analysed in the paragraph following thereafter.

- (a) *Agreed with the proposal.*

- (b) *The existing procedure may continue.*
- (c) *No comments.*

3.10.2 Most of the service providers have either agreed with the proposal or have not commented on the proposal. As such, the Authority has decided to remove this parameter from mandatory compliance and the performance against this parameter need not be reported to the Authority. However, the service provider shall continue to monitor the performance against this parameter and maintain the records thereof.

(b) Closures:

3.10.3 The Authority had issued a direction on 29th August, 2006 on termination of service. This direction provides for termination of service within 24 hrs. in case of request made in writing, within 3 days incase of request made through fax/e-mail ID registered with the service provider and within 7 days in the case of request made through telephone, SMS, e-mail. The benchmark for the parameter closure in the existing Quality of Service Regulation is within 24 hrs. It was proposed in the consultation paper as to whether the existing benchmark of within 24 hrs. to be continued or the benchmark should be as per the direction on termination of service or a new benchmark to be considered. The comments of the stakeholders are summarized in para (a) to (e) and analysed in the paragraph following thereafter.

- (a) *It may be either as per the direction on termination of service or a new benchmark to be considered.*
- (b) *Service provider should comply with 100% requests or closure of telephone / termination of service to be within 24 hours. Allot unique service request number and called docket number. Arrange collection of CPE. Raise bill / Refund after adjusting the security deposit.*
- (c) *The proposed benchmark should be increased to 3 days.*
- (d) *It should be as per the request of the customer otherwise, 24 hrs should be adhered in computing the performance.*
- (e) *No Comments.*

3.10.4 In the written comments, most of the service providers and consumer organizations have either agreed with the proposal or have not commented on the proposal. However, during the Open House Discussion some of the service providers have suggested 14 days to address the concerns of the customer for seeking closure and another 7 days for effecting closure. There were also comments from stakeholders that in case the services are not terminated at the earliest by the service provider the dues will increase and the customer may have to pay charges for not using the services. The Authority has considered the

above views of stakeholders and is of the view that 14 days time for retention efforts and another 7 days for effecting closure is a very long period and the consumer interest would be greatly affected in as much as the consumer may have to pay charges for the increased time for closure. The Authority has therefore decided that the time period for closure shall not be more than 7 days, uniformly for all means of request. This period would cover any effort to be made by the service provider for retention of the customer and for recovery of customer premises equipment (CPE), incase such CPE is the property of the service provider. The service provider shall cease to charge rental or any other charges beyond the period of 7 days of request for closure made by the customer. Further, bills shall be raised only after adjustment of the security deposit and the closure/ termination of service shall not be made conditional upon payment of dues. Also the closure/ termination of service shall not be made conditional upon payment of dues/bills/settlement of dispute. In all cases of request of closure/ termination, the request is to be complied with within 7 days of such request from the customer.

(c) Additional Facility:

3.10.5 It was proposed in the consultation paper that this parameter may be taken out of the Quality of Service Regulation. The comments of the stakeholders are summarized in para (a) and (b) and analysed in the paragraph following thereafter

- (a) *Agreed with the proposal.*
- (b) *No comment.*

3.10.6 In view of the above response of the stakeholders and the fact that the service provider is supposed to provide the additional facility, whenever the customer has made requests, at the earliest, in his own interest and that in the present scenario of competition, customer choice and substitution of wireline phone with mobile phone this parameter has less importance for monitoring by the Authority. As such, it has been decided to take this parameter out of QoS regulations.

3.11 Response time to the customer for assistance:

3.11.1 In the consultation Paper the following two sub-parameters with benchmarks were proposed for this parameter:

- (i) Accessibility of Call Centre number i.e. % age of calls answered which basically mean that the calls should get connected and answered. The benchmark proposed is minimum 95% calls to be connected successfully and not more than 5% calls shall encounter congestion or busy signal or no reply or any other failure.
- (ii) % age of calls answered by operators (voice to voice) within 60 seconds = 90% and not more than 5% calls shall encounter

busy signal or no reply or any other failure in getting connected to operator.

3.11.2 The comments of the stakeholders are summarized in para (a) to (d) and analysed in the paragraph following thereafter.

- (a) *After reaching the call centre the customer is hold online for long. The menu option should not be too many and time need to be specified.*
- (b) *The response time for customer assistance by operator voice to voice should be 2 minutes for 1. 3 minutes and 5 minutes for 3 minutes.*
- (c) *Title of the parameter will now be more clear.*
- (d) *Since market is reacting positively to the need, it is requirement that more stringent benchmarks may not be beneficial.*

3.11.3 The Authority has considered the above views of stakeholders and is of the view that accessibility of call centre number is of significant importance to the consumers. As such, the Authority is not in favour of relaxing the benchmark for the sub-parameter accessibility of call centre number and % age of calls answered by operators (voice to voice).

3.11.4 Regarding computation of the performance against the parameter %age of calls answered by operators (voice to voice), the time taken for connecting to the operator shall be calculated from the time the customer has keyed the relevant number in the IVR option menu, if provided, for speaking to the customer care executive/operator. Further, the menu for speaking to the customer care executive/operator shall be given preference in the menu options and this menu shall not be below the first sub-menu at the third layer, the first layer being the choice of language and the second layer the service menu.

3.12 **POI Congestion:**

3.12.1 Presently there is a parameter on POI congestion for Cellular Mobile Telephone Service. Congestion at the POIs is due to inadequate interconnection commensurate with the outgoing traffic at the Point of Interconnection between two telecom networks. This is applicable both for basic telephone service and the Cellular Mobile Telephone Service. Hence it was proposed in the consultation paper to introduce this parameter for basic telephone service (wireline) also with similar benchmark as prescribed for cellular mobile telephone service.

3.12.2 The comments of the stakeholders are summarized in para (a) and (b) and analysed in the paragraph following thereafter.

- (a) *The proposal for introduction of this parameter is accepted.*

(b) *Ok.*

3.12.3 The stakeholders have either accepted the proposal or there have been no comments. Since in a multi operator competitive scenario this parameter is of great importance for smooth flow of traffic between networks of different service providers. Therefore, the Authority has decided to prescribe this parameter for basic telephone service (wireline) also with similar benchmark ($\leq 0.5\%$) as for cellular mobile telephone service.

3.13 Time taken for refund of deposit after closure of telephone/ termination of service:

3.13.1 As per the existing provisions on refund of security deposit, 100% refund of security deposit is to be made within 60 days, failing which 10% per annum interest is payable. In the consultation paper it was proposed to continue with the same benchmark of 60 days. During the consultation process there has been general acceptance of this proposal as the Authority has not received any comment on this issue from stakeholders. As such, the Authority decided to continue with the existing benchmark of 100% refunds within 60 days after closure/ termination of service. Any delay in refund of deposits will attract interest of @10% per annum. Here the deposit includes security deposit and any other refundable deposit taken from the customer. The same benchmark shall also be followed for payment of any other dues payable to the customer at the time of closure/ termination of service. The Authority would also like to make it clear that the fact that interest is paid to the customer for delay in payment of dues does not absolve the service provider from the responsibility of meeting the prescribed benchmark.

4. Quality of Service Parameters for Cellular Mobile Telephone Service:

4.1 The parameters prescribed in these regulations for cellular mobile telephone service shall be equally applicable for basic service (wireless).

A. Network Service Quality Parameters:

4.2 Network availability:

4.2.1. It was proposed in the consultation paper to redefine the existing parameter “accumulated down time for community isolation” to two new parameters “BTSs accumulated downtime (not available for service)” with benchmark of $\leq 1\%$ and “Percentage of worst affected BTSs due to downtime” with benchmark of $\leq 1\%$. The comments of the stakeholders are summarized in para (a) to (h) and analysed in the paragraph following thereafter.

- (a) *Agreed with the proposal.*
- (b) *The parameter for “Percentage of worst affected BTSs due to downtime” should be $\leq 2\%$.*
- (c) *The benchmark for both parameters should be $\leq 2\%$ with outages more than 2 hours. The external factors such as Natural Calamities, War, riots etc., Accidental factors like Lightning, Permissions not granted by civic authorities for work like road cutting for cable repair work, Failures outside the control of service providers should be excluded. Some of the service providers have also suggested that rural sites with no State Electricity board connection should be excluded from the calculation.*
- (d) *Use of “Network Availability” in place of Accumulated downtime of community isolation” is more rational and desirable.*
- (e) *The revised parameter is not desirable, because in a practical scenario the contiguous BTS takes over in case of failure therefore, such BTSs be allowed to be excluded from the benchmark estimation or the existing benchmark should not be made stringent.*
- (f) *Only after independent survey across all the circles there should be any change.*
- (g) *Accumulated down time of community isolation basically in rural network should be properly monitored by Authority and benchmark of down time should be determined 20 hours during the month i.e. in 30 days but not more than one hour in a day under normal circumstances.*
- (h) *No comments.*

4.2.2 The Authority has considered the above views of stakeholders and since the proposal to introduce the two parameters of “BTSs accumulated downtime (not available for service)” and “Percentage of worst affected BTSs due to downtime” has generally been accepted by the stakeholders the Authority has prescribed these two parameters for compliance by service providers. As regards the benchmark for these two parameters, keeping in view the comments of some of the stakeholders, the Authority has prescribed benchmark of $\leq 2\%$ for both the parameters. This shall mean that the network should be available for service for 98% of the time in a month.

Measurement

4.2.3 “BTSs accumulated downtime (not available for service)” shall basically measure the downtime of the BTSs, including its transmission links/circuits during the period of a month, but excludes all planned service downtime for any maintenance or software upgradation. For measuring the performance against the benchmark for this parameter the down time of each BTS lasting for more than 1 hour at a time in a day during the period of a month shall be taken for computation. The

total duration in hours of all such instances of downtime of BTSs shall be calculated. Thereafter, the performance against the benchmark shall be measured through the following formula:

$$\text{BTSs accumulated downtime (not available for service) =} \\ \frac{\text{Sum of downtime of BTSs in a month} \\ \text{in hours i.e. total outage time} \\ \text{of all BTSs in hours during a month}}{24 \times \text{No. of days in the month} \times \text{No. of BTSs in the network in the} \\ \text{licensed service area}} \times 100$$

4.2.4 Worst affected BTSs due to downtime - For measuring the parameter “Percentage of worst affected BTSs due to downtime” the down time of each BTS lasting for more than 1 hour at a time in a day during the period of a month shall be recorded and wherever the accumulated downtime of a BTS during the period of a month exceeds 24 hours the said BTS shall be taken as worst affected BTS for computation. The total number of such worst affected BTSs in a month shall be determined. Thereafter, the performance against the benchmark shall be measured through the following formula:

$$\text{Worst affected BTSs due to downtime =} \\ \frac{\text{No. of BTSs having accumulated downtime} \\ \text{of >24 hours in a month}}{\text{Total No. of BTSs in the licensed service area}} \times 100$$

4.2.5 Further, for computation of performance against the benchmark for these two parameters, performance affected due to force majeure conditions shall be excluded for calculation purposes.

4.3 Service **Access delay:**

4.3.1 The service access delay comprises of (a) Time to connect Call (Mobile Station originated – Mobile Station connection part); (b) Time to confirm instruction to connect; (c) Time to release call and (d) Time to alert Mobile Set. Since this parameter is generally complied with by the service providers and the measurement of this parameter is not available in the switch it was proposed that this parameter may be taken out of QoS regulations. The comments of the stakeholders are summarized in para (a) and (b) and analysed in the paragraph following thereafter.

(a) *Agreed with the proposal.*

(b) *No comments.*

4.3.2 Since the stakeholders during consultations have also agreed to the proposal to take this parameter out of QoS regulations, the Authority is not prescribing this parameter for quality of service norms.

4.4 Connection Establishment (Accessibility)

4.4.1 For determining the accessibility there are three important parameters to be monitored, namely Call Setup Success Rate (CSSR), Standalone Dedicated Control Channel (SDCCH)/ Paging Channel and Traffic Channel (TCH). These are discussed below:

(a) Call Set-up Success Rate (CSSR)

4.4.2 Call Setup Success Rate is defined as the ratio of Established Calls to Call Attempts. Established Calls means the following events have happened in call setup:

- i) Attempt is made
- ii) The TCH is allocated and
- iii) The call is routed to the outwards path of the concerned MSC.

Thus this includes complete signaling in the call setup process and does not aim to measure the performance of the called exchange or that of the Point of Interconnection (PoI).

4.4.3 Call Attempt is defined in the ITU –T E600 (03/93)/2.4 as “an attempt to achieve a connection to one or more devices attached to a telecommunication network”. At a given point in the network a call attempt is manifested by a single unsuccessful bid, or a successful bid and all subsequent activity related to the establishment of the connection.

4.4.4 It was proposed in the consultation paper to retain this parameter with the existing benchmark of >95%. The comments of the stakeholders are summarized in para (a) to (c) and analysed in the paragraph following thereafter.

- (a) *Agreed the proposal.*
- (b) *These benchmarks also need to be reported city wise rather than*
- (c) *circle wise.*
- (d) *No comments.*

Since the above proposal was widely agreed by the stakeholders during consultation process, the Authority has decided to continue with the existing benchmark for this parameter. The CSSR shall be measured during time consistent busy hour using OMC generated data.

4.4.5 (b) Standalone Dedicated Control Channel (SDCCH) Congestion (c) Traffic Channel (TCH) Congestion

4.4.5.1 SDCCH and TCH congestion in the network lead to non-establishment of the call. The congestion can be in the signalling channel known as Standalone Dedicated Control Channel (SDCCH) (in respect of GSM network) /Paging Channel Congestion (in respect of CDMA network) or in the traffic channel (TCH). SDCCH channel/paging channel is the control channel where majority of the call set up occurs and is used for mobile station (mobile handset) to Base Transceiver Station (BTS) communications before the mobile station is assigned to TCH /speech channel. TCH is a logical channel which carries either encoded speech or user data. Blocked call means a call that is not connected because there is no free channel in radio access network of cellular mobile service provider to serve a call attempt. Numbers of blocked calls are those times where there is no free channel to serve a call attempt. Hence connection establishment (accessibility) represents congestion in the radio access network. The congestion may be at SDCCH level or TCH level. In the Consultation Paper it was proposed to continue these parameters with the existing benchmarks for SDCCH/Paging channel congestion and TCH congestion.

4.4.5.2 The comments of the stakeholders are summarized in para (a) to (c) and analysed in the paragraph following thereafter.

(a) Agreed with the proposal.

(b) These benchmarks also need to be reported city wise rather than circle wise.

(c) No comments.

4.4.5.3 Since the service providers and the consumer organisations have agreed with the proposal to continue these parameters with the existing benchmark, no change is made to the benchmarks for the parameters SDCCH/Paging Channel Congestion and TCH congestion. These parameters shall be measured using OMC generated data in Time Consistent Busy Hour.

4.5 Connection maintenance (Retainability) :

(a) Call Drop Rate

4.5.1 The call drop represents the service provider's ability to maintain a call once it has been correctly established. The objective of this parameter is to provide the consumer with an expectation of how successful a mobile network will be at retaining the signal throughout the whole duration of the call. This parameter shall include both incoming calls and outgoing calls which, once they have been established and have an assigned traffic channel (TCH), are dropped or interrupted

prior to their normal completion by the user, the cause of the early termination being within the service provider's network.

4.5.2 The parameter gives a reliable measurement of the mobile network used by the service provider for maintaining a call once it has been correctly established. Failures in coverage, problems with the quality of the signal, network congestion and network failures have important impact on this parameter. This parameter is affected by inadequate coverage, problems with the quality of the signal including interference, radio access network congestion. ETSI EG 202 057-3 v1.1.1 (2005-04) defined Dropped Call Ratio as "The percentage of calls which, once they have been correctly established and therefore have an assigned traffic channel, are interrupted prior to their normal completion by the user, the cause of the early termination being within the operator's network". Call drop in the network can be caused by a number of reasons relating to equipment, transmission, interference, hand-over, antenna etc. It was proposed in the consultation paper to reduce the benchmark for this parameter from <3% to $\leq 2\%$ as it was seen from the monitoring of performance of service providers against this parameter that their performances against the benchmark of <3% is mostly within the range and that the reasons for call drop lie within the operators network. Further, advancement in technology has enabled the service providers to reduce the call drop rate.

4.5.3 The comments of the stakeholders are summarized in para (a) to (f) and analysed in the paragraph following thereafter.

- (a) *Agreed the proposal.*
- (b) *Revisit this benchmark for this parameter.*
- (c) *The existing benchmark should continue.*
- (d) *Proposed change will tighten the performance of the operators.*
- (e) *Only after independent survey across all the circles there should be any change.*
- (f) *No comments.*

4.5.4 The service providers in general have suggested either to continue the existing benchmark or to revise the benchmark. The consumer organizations are either in favour of reducing the call drop rate benchmark, as proposed in the consultation paper, or have not commented on the proposal. The Authority has considered the above views of stakeholders and is of the view that a benchmark of $\leq 2\%$ for call drop could be achievable. Therefore, the Authority has prescribed benchmark of $\leq 2\%$ for the parameter call drop rate.

4.5.5 The measurement can be made via an automatic data collection system, based on the network counters which register the real traffic of the network. The counter is available on the switch or OMC and is recorded 24 hours a day, every day of the years. However, for reporting the performance the measurements have to be taken during TCBH. The formula for calculating the percentage of dropped calls is:

$$\frac{(A * 100)}{B} \quad \text{where:}$$

A = The total number of interrupted calls (dropped calls)

B = The total number of calls successfully established (where traffic channel is allotted)

The formula includes the interrupted calls which consist of failures which cause the dropping of the call once the TCH has been successfully established, and the successful seizure of TCH for an originated or terminated call.

(b) Worst affected cells having more than 3% TCH drops (call drop rate):

4.5.6 The reporting of achievement of Quality of Service against the parameter call drop rate does not reveal the extent of number of areas or localities where the call drop rate is worst. Worst affected cells are defined as cells in which the call drop rate exceeds 3% during cell Bouncing Busy Hour (CBBH) or at any other hour of a day. In the consultation paper the benchmark proposed for this parameter is $\leq 3\%$.

4.5.7 The comments of the stakeholders are summarized in para (a) to (f) and analysed in the paragraph following thereafter.

- (a) *Agreed with the proposal.*
- (b) *It would not be appreciated to apply a network level benchmark to cell level benchmark due to different level of GoS at cell level. Therefore, the benchmark figure should be decided only after monitoring from the operator's data over a period of time.*
- (c) *Setting a norm which is poorer than the overall norm is therefore not desirable. International benchmarks should be studied and aimed at.*
- (d) *Only after independent survey across all the circles there should be any change.*
- (e) *I do not understand what purpose this benchmark will serve.*
- (f) *No comments.*

4.5.8 While some of the service providers agreed with the proposal and some of the service providers have stated that it would not be appreciated to apply a network level benchmark to cell level benchmark due to

different level of GoS at cell level. The consumer organisations have either not commented on this parameter or have agreed with the proposal. The Authority considered the views of the stakeholders and is of the view that the networks are being rolled-out in rural and hilly and remote areas. Till the expansion phase is on, the call drop in cells in rural and remote and hilly areas could be more. In urban areas also where more customers are enrolled in excess of the capacity or where the infrastructure could not support the traffic, call drop in certain cells could be more due to interference. The Authority has been monitoring the information about the additional parameter “percentage of cells having >3% call drop (TCH drop)”. As per the information received by the Authority from the service providers from the month of September, 2008 to December, 2008, the Authority noted that most of the service providers are having excessive call drops in some of the pockets. The call drops in these pockets [served by a cell or Base Transceiver Station (BTS)] of the cellular mobile service providers is found more than 3%. The information received from the service providers for the quarter ending December, 2008 reveals that some of the service providers are having even more than 10% of the cells with more than 3 % Call (TCH) drops in many of the service area. Although, the service providers are meeting the benchmark of <3% for the parameter “Call Drop Rate” when averaged over a quarter for the service area as a whole, yet the customers are suffering with frequent call drops in affected cells /locations/areas which results in inconvenience to the customers. Since, the benchmark for the parameter “Call Drop Rate” has been made more stringent modifying it from < 3% to ≤2%, the need has arisen to include the parameter “%age of worst affected Cells having more than 3% TCH drop (Call drop) rate”. The Authority has, therefore, prescribed a phased implementation of the benchmark, with a lighter benchmark of ≤5% cells having more than 3% TCH drop (call drop) till 31.3.2011 and beyond that a benchmark of ≤3%.

4.5.9 The formula for calculating the Percentage of worst affected cells having more than 3% TCH drops (call drop rate) is –

$$\text{Percentage of worst affected cells having more than 3\% TCH drops (call drop rate)} = \frac{\text{No. of worst affected cells having call drop rate } >3\% \text{ during CBBH in a month} \times 100}{\text{Total No. of cells in the licensed service area}}$$

4.5.10 Cell Bouncing Busy Hour (CBBH) means the one hour period in a day during which a cell in cellular mobile telephone network experiences the maximum traffic.

(c) Connections with good Voice Quality:

4.5.11 The quality of voice in cellular mobile telecom services (GSM), is measured on a scale from 0 to 7 in GSM technology. As the quality deteriorates, this value increases. The quality of the voice is considered to

be good, if this value remains between 0 and 4. However, this value may be between 0 to 5 for the network where Frequency hopping phenomenon is used. In the case of CDMA, the fundamental performance measure for voice quality is the Frame Error Rate (FER). It is the probability that a transmitted frame will be received incorrectly. The frame includes signaling information and error detection bits as well as user voice/data. This metric includes the error detection/correction coding inherent in the system. Good voice quality is 0-4 % FER value. For FER of 4% for CDMA Enhance Variable Rate Codec (EVRC) System, the Speech Quality Rating is MOS score of 3.6. Further, for Bit Error Rate of Rx Qual 0 to 4 for GSM enhanced full rate (EFR) system, the Speech Quality Rating is MOS score of 3.4.

4.5.12 The existing benchmark for this parameter is >95%. This parameter is being measured by some of the service providers based on the system derived data. However, some of the service providers are furnishing the data based on the drive test on sample basis. It was proposed in the consultation paper to continue with this benchmark and that there should be system generated measurement for this parameter.

4.5.13 The comments of the stakeholders are summarized in para (a) to (f) and analysed in the paragraph following thereafter.

- (a) *Agreed with the proposal.*
- (b) *The present benchmark of >95% should be revised and brought down to >90%. However some of the service providers have also mentioned that for operators having AMR, then the good samples should be Rx Qual 0-6.*
- (c) *At present there is no system generated report for measuring connections with good voice quality.*
- (d) *Only after independent survey across all the circles there should be any change.*
- (e) *Suggested to conduct an end-to-end network call quality test as defined in ITU Recommendation and QoS framework should migrate from the measurement of network-centric data to user-centric data.*
- (f) *No comments.*

4.5.14 While the CDMA operators have agreed with the proposal, the GSM operators are in favor of revising the benchmark to $\geq 90\%$. The monitoring of performance of service providers against the benchmark for this parameter through the quarterly Performance Monitoring Reports reveals that more than 90% of the service providers are meeting the benchmark. As such, the Authority has decided to continue the parameter with the benchmark of $\geq 95\%$ being one of the important

parameter for consumer. The performance of service providers against this benchmark shall be based on system generated measurement.

4.6 **Service Coverage:**

4.6.1 This parameter is intended for measuring the coverage in terms of the received signal strength in areas where the service provider has commissioned the service. In the consultation paper no change was proposed to the existing benchmark of in door ≥ -75 dBm, In-vehicle ≥ -85 dBm and Out door- in city ≥ -95 dBm

4.6.2 The comments of the stakeholders are summarized in para (a) to (d) and analysed in the paragraph following thereafter.

- (a) *Agreed with the proposal.*
- (b) *Benchmark not agreed , only external coverage for this parameter needs to be considered .*
- (c) *TRAI should only prescribe outdoor signal of - 93/95 dBm, building coverage should be left to market forces and publishing such parameter on website would be misleading.*
- (d) *No comments.*

4.6.3 During consultations the service providers have generally opined that only the external coverage benchmark be prescribed. In the existing regulations the benchmark for this parameter is for measurement at street level. The Authority is of the view that measurement of coverage at street level should continue and in the interest of consumers this should not be left to market forces. Also there should be benchmark for coverage measurement in-vehicle. Accordingly, separate benchmarks have been prescribed for indoor coverage for which measurement is to be taken at street level and in-vehicle coverage. The Authority feels that street level coverage of ≥ -75 dBm could provide good indoor coverage in normal conditions. Further, as per the test schedule of TEC also for verifying compliance of roll out obligations, the signal strength required for in building coverage is defined as ≥ -75 dBm at street level. However, in the case of in-vehicle assessment/ measurement for coverage the benchmark prescribed shall be ≥ -85 dBm.

4.7 **Point of Interconnection (POI) Congestion:**

4.7.1 This parameter signifies the ease by which a customer of one network would be able to communicate to the customer of another network. This parameter also reflects as to how effective is the interconnection between two networks. It was proposed in the consultation paper to retain this parameter with the existing benchmark of $< 0.5\%$, to be monitored on monthly basis.

4.7.2 The comments of the stakeholders are summarized in para (a) to (d) and analysed in the paragraph following thereafter.

- (a) *Agreed with the proposal.*
- (b) *Issues that are not within the control of operators should be excluded such as Fiber cut, other operator in granting EIs due to port/ equipment issues, outages due to other operator, important festivals, forced majeure and natural calamity.*
- (c) *Emphasis need to be given on removing the shortcomings.*
- (d) *No comments.*

4.7.3 The service providers and consumer organizations have generally agreed with the benchmark for this parameter. As such, the Authority has prescribed the benchmark of $\leq 0.5\%$. As regards the suggestions to exclude issues that are not control of the service providers, the Authority is of the view that only performance affected due to force majeure conditions need be excluded for calculation purpose. The measurement of this parameter shall be made during Time Consistent Busy Hour.

B. Customer Service Quality Parameters:

4.8 Metering and billing credibility:

4.8.1 In the existing regulations three parameters are there relating to billing complaints viz. (i) billing complaints per 100 bills issued (benchmark $<0.1\%$); (ii) Percentage of billing complaints resolved within 4 weeks (benchmark $<100\%$); and (iii) period of all refunds/payments due to customers from the date of resolution of complaints (benchmark <4 weeks). In the consultation paper it was proposed to have separate parameters for post-paid billing and pre-paid charging under the title "Metering and billing credibility". The various types of billing complaints were also proposed to be clarified.

4.8.2 The comments of the stakeholders are summarized in para (a) to (e) and analysed in the paragraph following thereafter.

- (a) *Agreed.*
- (b) *The scope of the existing parameter should be retained and should not be extended to billing related services. Waiver or refund should not be included.*
- (c) *Benchmark of $<0.1\%$ is right for metering errors only. If other proposed categories are to be included in billing complaints then bench mark should be revised to $<5\%$.*
- (d) *Separate parameter for pre-paid customers is a welcome move. The existing benchmark accepted.*

(e) *No comment.*

4.8.3 The Authority considered the above views of stakeholders and has decided to retain the existing benchmark of not more than 0.1% of bills issued should be disputed over a billing cycle for post-paid billing. Regarding Items to be covered under billing complaint, keeping in view the comments of stakeholders, the Authority has decided to exclude items relating to bills received late and bill not received from the type of billing complaints and the billing/charging complaints will now include, but not limited to, the following:

- (a) payment made and not credited;
- (b) payment made on time but late payment charges levied wrongly;
- (c) double charges;
- (d) charging for toll free services;
- (e) local call charges billed as STD/ISD or vice versa;
- (f) calls or messages made disputed;
- (g) wrong roaming charges;
- (h) credit agreed to be given in resolution of billing/ charging complaints but not accounted in the bill;
- (i) charging for services provided without consent;
- (j) charging not as per tariff plan;
- (k) overcharging or undercharging

4.8.4 In addition to the above, any billing/charging complaint which leads to billing/ charging error, waiver, refund, credit or any adjustment shall also be included as billing/charging complaint for calculating the number of disputed bills.

4.8.5 The measurement of the parameter “Metering and Billing Credibility – post-paid” is to be done as per the following formula:

$$\text{Billing complaints (percentage)} = \frac{\text{total number of disputed bills} \times 100}{\text{total number of bills issued during one billing cycle.}}$$

4.8.6 Regarding the parameter metering and billing credibility: Pre-paid charging the Authority has prescribed the benchmark of not more than 1 complaint per 1000 customers i.e. 0.1% complaints for metering, charging, credit and validity.

4.8.7 The measurement of the parameter “Metering and Billing Credibility – pre-paid ” is to be done as per the following formula:

$$\text{Pre-paid charging complaints (percentage)} = \frac{\text{total number of complaints relating to Charging, credit \& validity during quarter} \times 100}{\text{total number of pre-paid customers at the end of the quarter}}$$

4.9 Resolution of Billing/ Charging complaints:

4.9.1 This parameter is intended to facilitate resolution of billing complaints in a timely manner. It was proposed in the consultation paper to continue with the present time limit of 4 weeks for resolution of billing complaints. Monitoring of this parameter will help the service provider in collection of dues and also avoidable bad debts. This will also help to increase the customer satisfaction.

4.9.2 The comments of the stakeholders are summarized in para (a) to (c) and analysed in the paragraph following thereafter.

(a) *Agreed.*

(b) *The existing benchmark should be continued for post paid services and for pre paid, wherein the complaints have been lodged within 30 days of the credit. However the prepaid complaints lodged after 30 days, 6 weeks time may be provided as it takes significant amount of time to retrieve the data from the archive.*

(c) *No comments.*

4.9.3 The Authority has considered the above views of stakeholders and is of the opinion that the benchmark should be uniformly applicable for all categories of subscribers and that a separate benchmark for pre-paid charging complaints of more than 30 days old is not desirable. From the consumer point of view also longer time period for resolution of billing complaints is also not desirable. As such, the Authority has decided to continue the existing benchmark of 100% resolution of billing complaints (for post-paid customers)/ charging complaints (for pre-paid customers) within 4 weeks of making complaint by consumer.

4.9.4 The performance against this parameter is to be measured as per the following formula:

%age of billing complaints (for post-paid customers)/ charging, credit & validity (for pre-paid customers) resolved within 4 weeks =

$$\frac{\text{number of billing complaints for post-paid customers/charging, credit/ validity complaints for pre-paid customers resolved within 4 weeks during the quarter}}{\text{number of billing/charging, credit / validity complaints received during the quarter}} \times 100$$

 number of billing/charging, credit / validity complaints received during the quarter

4.10 **Period of applying credit/ waiver/ adjustment to customer's account from the date of resolution of complaints**

4.10.1 It was proposed in the consultation paper that all refunds in the form of credit/ waiver/ adjustment to be applied to customers should be made within one week from the date of resolution of the complaint. The comments of the stakeholders are summarized in para (a) to (d) and analysed in the paragraph following thereafter.

- (a) *Agreed.*
- (b) *We believe that atleast two weeks time should be given to refund all dues*
- (c) *The existing benchmark should continue.*
- (d) *No comment.*

The Authority considered the above views of stakeholders and is of the opinion that resolution of billing complaints and refund in the form of credit/ waiver / adjustment are both inter related activities and therefore one week time should be enough for making credit/waiver/adjustment in case billing/ charging complaint is upheld. Thus a billing complaint has to be resolved within four weeks and any credit/waiver/adjustment arising out of resolution of that complaint has to be made to the customer's account within one week of resolution of the complaint and intimation thereto the customer, post-paid/pre-paid. Further, in case of post paid customer the same shall also be reflected in the next bill to be issued.

4.11 **Response Time to the customer for assistance:**

4.11.1 In the consultation paper similar benchmark for this parameter as in the case of basic telephone service (wireline) (refer para 3.11) was proposed. The comments of the stakeholders are summarized in para (a) to (f) and analysed in the paragraph following thereafter.

- (a) *Agreed.*
- (b) *Since market is reacting positively to the need, it is requirement that more stringent benchmarks may not be beneficial.*
- (c) *It is difficult to even meet the existing benchmark; the calls made may be broadly classified into queries and complaints/grievances.*
- (d) *The response time for customer assistance by operator voice to voice should be 2 minutes.*
- (e) *Agreed only with the second proposal.*
- (f) *No comments.*

4.11.2 The Authority has considered the above views of stakeholders and has decided that the same parameter and benchmark as in the case of

basic telephone service (wireline) shall be retained for cellular mobile telephone service also. Thus the sub-parameters and benchmark for the parameter “Response time to the customers” are as under:

- (i) Accessibility of Call Centre number i.e. % age of calls answered which basically mean that the calls should get connected and answered. The benchmark proposed is minimum 95% calls to be connected successfully and not more than 5% calls shall encounter congestion or busy signal or no reply or any other failure.
- (ii) % age of calls answered by operators (voice to voice) within 60 seconds = 90% and not more than 5% calls shall encounter busy signal or no reply or any other failure in getting connected to operator.

4.11.3 The computation of the performance against these parameters and the provision of menu for speaking to the customer care executive/operator in the IVR option menu shall be as given in para-3.11.4.

4.12 **Closure of mobile telephone/termination of service:**

4.12.1 As in the case of basic telephone service (wireline), it was proposed in the consultation paper as to whether the existing benchmark of within 24 hrs. to be continued or the benchmark should be as per the direction on termination of service or a new benchmark to be considered. The comments of the stakeholders are summarized in para (a) to (f) and analysed in the paragraph following thereafter.

- (a) *15 days time from the date of request for termination of service may be given to retain the customer.*
- (b) *Major chargeable services like STD/ISD calls, monthly rentals could be stopped within 48/72 hrs after receiving the customer request.*
- (c) *The operators may be given 10 working days time.*
- (d) *Clarity required for LTV Cards.*
- (e) *It should be alike to existing parameters for basic service.*
- (f) *No comments.*

4.12.2 During open house Discussion some of the service providers have suggested 14 days time to be given to address the concerns of the customer for seeking closure and another 7 days for effecting closure. The issues relating to closure/ termination of service are discussed under para 3.10.3 and 3.10.4 in the context of Basic Telephone Service (wireline) and the Authority has decided to prescribe similar benchmarks for both basic telephone service (wireline) and cellular mobile telephone

service i.e. the time period for closure shall not be more than 7 days uniformly for all means of request for termination/ closure of service

4.13 Time taken for refund of deposits after termination of service:

4.13.1 In the consultation paper it was proposed to introduce a parameter on time taken for refund of deposits after termination of service and the benchmark proposed was 100% refund within 60 days of request for termination of service. The comments of the stakeholders are summarized in para (a) to (c) and analysed in the paragraph following thereafter.

- (a) *This parameter is not required.*
- (b) *Agreed but the period of 60 days should start only after 15 days of request of termination of service.*
- (c) *No comment.*

4.13.2 In the case of cellular mobile telephone service also 100% refunds of deposits have to be made within 60 days. Any delay in the refund of deposits will attract interest @10% per annum payable to the customer. Here also the deposit includes security deposit and any other refundable deposit taken from the customer. The same benchmark shall also be followed for payment of any other dues payable to the customer after closure/ termination of service. The Authority would also like to clarify that the fact that interest is paid to the customer for delay in payment of dues and does not absolve the service provider from the responsibility of meeting the prescribed benchmark.

5. Customer perception of service for Basic Telephone Service (Wireline) and Cellular Mobile Telephone Service:

5.1 Section 11(1)(b)(v) of the TRAI Act, 1997 provides for the Authority to conduct periodical survey of service provided by the service providers so as to protect the interest of consumers. Keeping in view this mandatory function, the Authority has been conducting customer satisfaction surveys to assess the customer perception of service against the laid down quality of service benchmarks. As per the existing Quality of Service Regulations issued in July 2005 seven parameters have been prescribed for assessing customer perception of service through surveys, both for basic telephone service (wireline) and cellular mobile service. These parameters, with benchmark in bracket, are (i) % satisfied with the provision of service (>95%); (ii) % satisfied with the billing performance (>90%); (iii) % satisfied with help services (>90%); (iv) % satisfied with network performance, reliability and availability (>95%); (v) % satisfied with maintainability (>95%); (vi) overall customer satisfaction (>95%); (vii) customer satisfaction with offered supplementary service % satisfied (>95%).

5.2 There is a direct relationship between Customer Satisfaction and the Quality of Service. The Quality of Service depends on the provider of the service who is responsible for improving and maintaining the network performance and customer care. The Network Performance is the ability of a network or network portion to provide the functions related to communications between users. Similarly, performance in customer care depends on the ability of the service providers to address the consumer complaints and requests in regard to service, including billing.

5.3 Presently the customer perception is assessed through personal and telephonic interviews, based on questionnaire designed for the purpose. The methodology for assessing the customer perception of service based on percentage satisfaction, presently being followed by the Authority, is that the satisfaction level of subscribers is collected on a four point scale of “very satisfied”, “satisfied”, “dissatisfied” and “very dissatisfied”. The responses against each question is analysed and results computed with weightage assigned to the various degree of satisfaction. In the consultation paper an alternate approach based on Mean Opinion Score (MOS) was also proposed.

5.4 The comments of the stakeholders are summarized in para (a) to (q) and analysed in the paragraph following thereafter.

Parameters and Benchmarks

- (a) *Agreed.*
- (b) *The surveys may be conducted only when there the Authority ceases to specify the quality benchmarks and requires regular reporting by the service provider.*
- (c) *The existing parameters and the benchmarks are too stringent Therefore, we request you to relax the benchmarks. There is no need to introduce a new parameter such as Mean Opinion Score. The weighted satisfaction scores should be retained. Some of the service providers have also suggested that, Percentage satisfied with provision of service & billing performance should be >60%.*
- (d) *Percentage satisfied with billing performance and help service should >95% instead of >90%.*
- (e) *The benchmark should be incorporated in the PMR to understand the level of satisfaction.*
- (f) *The existing benchmark should be retained However, there should be a regulation for imposing punitive damage upon the defaulter service providers and the damage should be distributed to the customers of the particular service provider*
- (g) *Mean of scores is a preferred criterion.*

Assessment Methodology

- (h) Not agreed, as the weights for each parameter would differ from customer to customer. Further these scores represent ranking or indexing of the service providers which may influence the customer buying behaviour.*
- (i) The surveys may be conducted only when there the Authority ceases to specify the quality benchmarks and requires regular reporting by the service provider.*
- (j) Mean of Opinion Score [MoS] is more suited for assessment. An additional / separate parameter relating to GRIEVANCE Redressal Mechanism is required.*
- (k) The Semantic Differential scale is not an ordinal scale because the statistically correct method of calculation is to present Percentage of respondent falling in each scale descriptor.*
- (l) Merger not recommended. Existing parameter be retained.*
- (m) Instead of conducting surveys, drive tests by independent agency and by having end-to-end call quality measurement systems.*
- (n) Alternative approach of MOS may be introduced to assess the customer satisfaction data.*
- (o) Assessment of QoS relating to service provider can be made through feedback.*
- (p) Mean of scores is a better parameter.*
- (q) No comments.*

5.5 Regarding the parameters and their benchmarks for assessing customer perception of service, the service providers are generally in favour of continuing with the existing parameters/benchmarks. From the service providers' side the views include retaining of the existing benchmarks, relaxing the existing benchmarks and for not prescribing any benchmarks. The Authority has observed that in the recent surveys undertaken by the Authority the performance of the service providers had been much below the existing benchmarks for the various parameters for assessing customer perception level. From the experience of the authority in monitoring the performance against these benchmarks the Authority is of the view that it would be very difficult for the service providers to achieve the existing benchmarks, using the weighted average method for computing customer perception level. In this background the Authority has decided to relax the benchmarks for some of the quality of service parameters for assessing customer perception of service and to assess the satisfaction score with the responses satisfied/ very satisfied with the parameters on customer perception of service.

5.6 The different areas leading to customer satisfaction for different parameters for customer perception of service are further explained below:

(a) **Service provision:**

- (i) Satisfaction with time taken to provide/ activate working phone connection.
- (ii) Satisfaction with the time taken for shifting of telephone.
- (iii) Satisfaction with re-activation of service in case of disconnection due to non-payment.
- (iv) Satisfaction with ease of understanding the offer or tariff plan.

(b) **Billing/ Charging Performance:**

Post paid:

- (i) Satisfaction with the timely receipt of the bill.
- (ii) Satisfaction with the accuracy and completeness of the bill.
- (iii) Satisfaction with the clarity in bills/ presentation of the billing information in terms of transparency and understandability.
- (iv) Satisfaction with the process of resolution of billing complaints.

Prepaid:

- (i) Satisfaction with accuracy of charges i.e correctness of the amount deducted on every usage.
- (ii) Satisfaction with the credit and validity correctness.
- (iii) Satisfaction with the ease and transparency of recharge.

(c) **Network Performance, reliability and the availability:**

- (i) Satisfaction with the network coverage (signal strength or availability of telephones connections).
- (ii) Satisfaction with the ability to make or receive calls easily.
- (iii) Number of call drops experienced during conversation.
- (iv) Satisfaction with the voice quality.

(d) **Maintainability:**

- (i) Average duration and frequency of network/ exchange outages (signal or dial tone non-availability).
- (ii) Satisfaction with the availability of network (signal or telephone dial tone)

- (iii) Satisfaction with the restoration of network (signal/exchange) problems.
 - (iv) Number and frequency of faults/ problem experienced.
- (e) **Supplementary Services/ Value Added Services :**
- (i) Satisfaction with process of activation of supplementary/ value added services.
 - (ii) Satisfaction with ease of messaging (SMS/MMS)
 - (iii) Satisfaction with the roaming services.
 - (iv) Satisfaction with the voice mail.
 - (v) Satisfaction with the quality of the supplementary/ value added services.
- (f) **Help services/ customer care (including customer grievance redressal):**
- (i) Satisfaction with ease of access of call centre/ customer care or help line
 - (ii) Satisfaction with the response time taken to answer (waiting time) the call by the customer care executive.
 - (iii) Satisfaction with the time taken by call centre/ customer care/ help line to resolve the complaint.
 - (iv) Satisfaction with the problem solving ability of the customer care executive.
 - (v) Satisfaction with the achievement of a satisfactory solution or resolution of complaint.
 - (vi) Satisfaction with the overall grievance redressal mechanism.
- (g) **Customer Satisfaction with overall service quality:**
Satisfaction with overall quality of total service offering.

5.7 As regards the methodology for assessment of customer perception of service there are mixed responses from stakeholders. While some are in favour of continuing with the weighted satisfaction scores, some are in favour of introducing mean opinion score (MOS) and some of the stakeholders are also of the view that only statistically correct method to adopt is to calculate the percentage of respondents falling in each scale descriptor (i.e. very satisfied, satisfied, dissatisfied and very dissatisfied). The Authority considered the views of the stakeholders on the methodology and has decided to continue with the survey of customers for perception of quality of service on a four point scale descriptor of “very satisfied”, “satisfied”, “dissatisfied” and “very dissatisfied”. However, no weightage shall be assigned to the above four point scale of customer

perception/ responses. For computation of customer satisfaction against the benchmark, only the responses of “very satisfied” and “satisfied” customers shall be taken into account. The acceptability of a service provider’s service shall be determined by the percentage of respondents who are “very satisfied” or “satisfied” with the service. For example if the percentage of “very satisfied” and “satisfied” customers with maintainability is 95% or more than it will be considered that the benchmarks for Maintainability parameter is met and service is at acceptable level to customers. The Authority has decided to prescribe the following parameter and their benchmarks accordingly for determining customer perception of service through customer satisfaction surveys.

- (a) customers satisfied with the provision of service $\geq 90\%$
- (b) customers satisfied with the billing performance $\geq 95\%$
- (c) customers satisfied with network performance, reliability and availability $\geq 95\%$
- (d) customers satisfied with maintainability $\geq 95\%$
- (e) customers satisfied with offered supplementary services $\geq 90\%$
- (f) customers satisfied with help services including customer grievance redressal $\geq 90\%$
- (g) customers satisfied with overall service quality $\geq 90\%$

5.8 The results of the survey on customer perception of service may be made public by the Authority for the information of the customers to generate healthy competition amongst service providers to improve service.

6. **Record keeping and reporting:**

6.1 In the consultation paper it was proposed that the service provider shall inform TRAI about their record keeping for different Quality of Service parameters. TRAI will study these record keeping procedures and will come out with a uniform record keeping procedure to be adopted by all service providers. It was also proposed to introduce a system of internal auditing by the service providers. As regards reporting of performance against quality of service benchmarks, it was proposed to continue with the present system of quarterly reporting of performance. As regards reporting of POI congestion it was proposed to continue with the monthly reporting of POI congestion. The comments of the stakeholders are summarized in para (a) to (g) and analysed in the paragraph following thereafter.

- (a) *Agreed with the proposal.*
- (b) *Internal auditing must be organized through chartered accountants and also internal Departments*

- (c) *Since the information is directly generated by the system, we do not support any separate mechanism for internal auditing.*
- (d) *The existing procedure may continue.*
- (e) *Uniform record keeping is essential*
- (f) *Uniform record keeping procedure be adopted only after the study of the existing record keeping procedure adopted the service providers*
- (g) *No comments.*

6.2 The Authority considered the above views of stakeholders and has decided to continue with the existing practice of reporting of performance against quality of service benchmarks through quarterly Performance Monitoring Reports (PMR) and monthly POI congestion reports. The Authority may review and change the reporting formats, from time to time. As regards uniform record keeping procedures, the Authority will prescribe uniform record keeping procedures including guidelines on measurements methodology to be followed by all the service providers after studying the record keeping processes being followed by the various service providers. The Authority at present is not prescribing internal audit mechanism. However, the Authority may audit/ inspect, either directly or through an agency appointed by it the records/ measurement relating to each quality of service parameter and reporting of its performance to the Authority. The Authority may also require the service provider to get the report submitted to the Authority audited at its own cost through independent and qualified agency.

7. Publication of QoS

7.1 It was proposed in the consultation paper to mandate the service providers to publish information relating to their quality of service performance for information of the consumer. Three formats were also proposed for such publication of quality of service. One format is for publishing the quality of service performance of basis service (wireline). Two formats are for publishing quality of service information of cellular mobile telephone service relating to network related parameters and billing & customer care parameters.

7.2 The comments of the stakeholders are summarized in para (a) to (i) and analysed in the paragraph following thereafter.

- (a) *Agreed.*
- (b) *One more format giving the details about the performance of the consumer's grievance Redressal mechanism should be included.*
- (c) *The format specified in the consultation paper would only confuse the consumers, However, the consumer may be informed about the tariff and service.*

- (d) *Publishing the parameters on the respective operator's website is not a good option. The data submitted by operators should only be published at one place, i.e. on TRAI website. The operators however can give the link of TRAI website in their websites.*
- (e) *TRAI already is uploading QoS performance of operators on its website. Operators may give link to the same from their website. so that customer can see the comparative performance from single chart.*
- (f) *QoS standard should be monitored through complaint attended by the service provider.*
- (g) *This information will enable customer to make INFORMED decision and discontent will go down.*
- (h) *Since the surveys are conducted by TRAI it is the responsibility of TRAI to publish it in the interest of the consumers.*
- (i) *No Comments.*

7.3 The Authority considered the above views of stakeholders and is of the opinion that the service providers are already publishing the terms and conditions of the service, the tariff plans on offer and also provide customer account related information on their website. The customers generally refer the website of its service provider for new tariff plan offer etc. and it would be proper if the information relating to quality of service is also published on the website of each service provider. Hence, in the regulations the Authority has provided for publication of information relating to quality of service by each service provider on their website. The Authority has been publishing summary of Quarterly Performance Monitoring reports, the results of audit and customer satisfaction survey undertaken by the Authority through agencies appointed by it on its website. The Authority may continue to publish such information for information of stakeholders. In addition, the Authority may also publish, licensed service area wise, information relating to comparative performance of service providers against quality of service benchmarks for key parameters

8. **Benchmarking:**

8.1 In the consultation paper it was proposed to introduce two indexes for cellular mobile telephone service, one related to network parameters named Network Service Quality Index (NSQI) and the other index related to customer service named Customer Service Quality Index (CSQI). It was also proposed to introduce a 10 point score for evaluating the performance against each parameter and to give equal weightage to each parameter. The evaluation of performance on each parameter will be based on whether the service provider has achieved the benchmark or not. Wherever the benchmark is achieved a score of 10 points will be

assigned to that parameter. In case the performance on any parameter is below the benchmark, the score in respect of that parameter would be reduced depending on the level of performance. The performances below the benchmark will be assigned 7 points, 4 points and 1 point depending on the level of performance.

8.2 The comments of the stakeholders are summarized in para (a) to (g) and analysed in the paragraph following thereafter.

- (a) *Agreed.*
- (b) *TRAI may desist from issuing any index or rating for network service quality or customer service quality.*
- (c) *Since the indexing or rating would impact the fair play of the market, TRAI should standardize the process of measurement before proposing such benchmark.*
- (d) *TRAI should standardize the process of measurement in conjunction with the measurement of these indices and there should be online submission of the data.*
- (e) *There should another parameter CPQI (Customer Perceived Quality Index).The ranking will improve contestability in the market and hence provide incentives to operators to improve their service.*
- (f) *Equal weightage to different parameters is not correct.*
- (g) *No Comments.*

8.3 The Authority considered the above views of stakeholders and is of the view that the users need to have information on delivered performances of various service providers so that they can make also informed choice about the service providers, based on quality of service performance. The benchmarking could also benefit the service providers as they could compare their quality of service with that of their competitors and could face competition effectively. However, at this stage when the cellular mobile telephone service is growing exponentially, the Authority feels that benchmarking and assigning of index of quality of service may not be necessary. Hence, for the time being the Authority may publish the comparative performance of quality of service of cellular mobile service providers and standardize the process of measurement and uniform record keeping. This will be reviewed by the Authority in future.

9. **Financial disincentives:**

9.1 Non-compliance with the Quality of Service standards laid down by TRAI amounts to violation of the Quality of Service Regulations of TRAI. For such violation of the regulations, one of the options for the Authority is to take penal action against the service provider under the provisions of the TRAI Act, 1997. These provisions in the TRAI Act are

available in Section 29, 30 and 34 of the TRAI Act, 1997. The various licences for access service provide for imposition of penalty by Department of Telecommunications for violation of license conditions. Since as per the licence conditions the service providers have to meet the Quality of Service standards laid down by TRAI or the licensor, any failure to meet the benchmarks laid down by TRAI for the various Quality of Service parameters amounts to violation of licence conditions and the Department of Telecommunications has powers to impose penalty. The Authority could recommend to the Department of Telecommunications for imposition of penalty for such violation of licence conditions.

9.2 From the experience of TRAI, for imposing penalty for violation of its direction/order/regulation, it is seen that the process takes considerable time and during this process the consumer gets no relief. A delayed action against the service provider is as good as ineffective and the customer is the main sufferer of poor quality of service. The Authority in the case of basic telephone service (wireline) has provided specific monetary compensation to subscribers such as rent rebate in the case of delayed repair of faults, interest on delayed payment of security deposit. However, in the case of Cellular Mobile Telephone Service direct compensation to customers is not a workable proposition. A combination of financial disincentive and penalty could act as a deterrent against poor Quality of Service. The Authority sought the views of stakeholders for introducing a scheme of financial disincentives for enforcing quality of service and also for providing financial disincentives in the case of specific violation of any of the directions/orders/ regulations of the Authority.

9.3 The comments of the stakeholders are summarized in para (a) to (i) and analysed in the paragraph following thereafter.

- (a) *Agreed.*
- (b) *The cost of bringing up the service to the desired level should be worked out and the service provider should be asked to pay an amount comparable to this cost.*
- (c) *In terms of TRAI Act and the provision of UAS license no provisions has been made for the imposition of penalty/financial disincentives therefore, authority cannot impose specified penalty for violation of regulation. The service providers are only required to meet the benchmark specified by the authority. Regarding the time taken under the procedure cannot be a tenable ground for stipulation of penalty.*
- (d) *System of DIRECT COMPENSATION to the customer will be more effective and SATISFYING. For continuous failure PENALTY is essential.*

- (e) In the intensely competitive Indian market, where the market forces are working well, The policy of forbearance and intervention in exceptional/isolated cases may be continued.*
- (f) TRAI should encourage operators to come up with their own charter to customers within which they would pledge penalties to customer directly.*
- (g) Comparative report with data regarding not meeting the benchmark published on website of TRAI itself becomes a punishment and lead to churn ,hence financial penalty is not desirable.*
- (h) In case of large deviation between the performances of operators authority can intervene in terms of issuing a direction wherein the operator can be given fixed time to meet the benchmarks instead of penal action.*
- (i) There should be a penalty at the rate of Rs.X per percentage point below the benchmark. That is if the benchmark is 95% and performance is reported at 87% then at the rate of Rs.10,000/- the service provider should be liable to pay a penalty of Rs.80,000/-.*
- (j) No comments.*

9.4 The Authority considered the above views of service providers and is of the opinion that apart from indirectly addressing Quality of Service through publication of the Quality of Service provided by the service providers thereby enabling the customers to have an informed choice, the imposition of financial disincentives for ensuring Quality of Service is also an option. The Authority has already provided for financial disincentives in the case of unsolicited commercial communication through the Telecom Unsolicited Commercial Communications Regulations, 2007 (4 of 2007). The Authority may consider issuing similar regulations, separately, for imposing financial disincentives to ensure the compliance of quality of service regulations, after detailed analysis of the performance of service providers once these regulations are implemented.