Confederation of Indian Industry

**CII Submission: Consultation Paper on Review of Quality-of-Service Standards
for
Access Services (Wireless and Wireline)
and
Broadband Services (Wireless and Wireline)**

December 2023

Brief

This is in reference to the TRAI consultation paper on Review of Quality-of-Service Standards for Access Services (Wireless and Wireline) and Broadband Services (Wireless and Wireline).

The QoS encompasses various metrics such as reliability, latency, and bandwidth, all of which contribute to the overall performance and user experience. While acknowledging the intent of TRAI to review the QoS regulations, we propose careful consideration of the proposed regulation to ensure optimal growth for telecom network technologies like 5G. The current draft requires in-depth justification and international benchmarks for the heightened compliance requirements. It is important to highlight certain key factors that need attention since they have a direct impact on QoS and customer experience, but these factors that are totally out of control of Telecom Service Providers (TSPs). These include
(but not limited to) factors like Right of Way (RoW), the presence of unauthorized repeaters/boosters, ensuring good handset quality, managing spectrum costs, and adhering to regulations related to tower installations i.e. stringent norms around EMF of India following $1/10^{th}$ of ICNIRP norms.

With this background establishing further stringent norms or benchmarks could pose significant financial and compliance challenges. The proposed transition from quarterly to monthly reporting, along with averaging compliance measurements over a month, requires careful consideration to align with the government's Ease of Doing Business (EoDB) objectives. A quarterly averaging approach as at present offers a more nuanced analysis of trends, helping to smooth out minor fluctuations. This balanced approach aims to safeguard the interests of all parties involved.

TRAI has been instrumental in fostering transparency and competitiveness in the telecommunications industry. However, we recommend a positive reevaluation of the Quality of Service (QoS) stance in draft regulations. Proposing a balanced approach that gradually leans towards deregulation is prudent. We propose that conducting a regulatory impact assessment should be a vital prerequisite before implementing any regulation with potentially significant consequences.

a. In the short term, implementing a light-touch regulatory framework with fewer measured parameters is advisable.
b. Simultaneously, for the long term, fully deregulating QoS parameters while maintaining oversight through methods like drive tests or third-party surveys could usher in enhanced efficiency, innovation, and increased investment, thereby elevating service standards and ensuring heightened customer satisfaction.

We would also like to emphasize that India's telecommunications network is structured and established according to the licensing framework of 22 licensed service areas (LSAs). Therefore, the regulations and reporting requirements set forth by TRAI should align with the licensing regime in India for consistency.

Additionally, a significant modification proposed in the draft involves evaluating call drops separately for various technologies, departing from the previous technology-agnostic approach. It's essential to note that customers are generally unaware of the technology used during a call, making separate assessments unnecessary. Furthermore, as technology advances, newer technologies inherently bring about improved efficiencies and quality, and Telecommunication Service Providers (TSPs) design their networks with these characteristics in mind.

In light of this, the assessment for call drops should ideally occur at the consolidated network layer rather than for individual technologies, considering the holistic network design approach undertaken by TSPs.

In reference to the consultation paper, we have carefully crafted responses for each question outlined in Chapter 6, offering comprehensive insights into the proposed regulatory framework. In Chapter 3 and Chapter 5, our comments on the draft regulation.

S.No. **Questions & Submissions**

Q1. **What are the possible reasons for increasing gaps between the QoS reported by the service providers and the QoS experienced by the consumers? How this gap can be bridged?**

Submission

The question appears to be based on an assumption, without any data to support the same. Our perspective differs concerning the purported existence and expansion of a gap between the reported Quality of Service (QoS) and the actual customer experience. We maintain that, from our standpoint, the QoS reported to TRAI accurately provides a statistical basis for assessment of QoS and reflects the customer experience.

However, if the Authority has indeed collected data indicating a disparity and its widening scope, this information is not explicitly presented in the consultation paper. In light of this, we kindly request that the Authority release these specific details as an addendum to the consultation paper. Having access to such data would enable us to respond with greater precision, fostering a more informed and constructive dialogue on this matter. We believe that this additional information will contribute significantly to a comprehensive understanding of the QoS landscape, benefiting all stakeholders involved.

Q2. **To support emerging applications and use cases please suggest a transparent framework for measurement and reporting of QoS and QoE especially in 4G and 5G networks considering relevant standards and global best practices.**

Submission

The current framework for the measurement and reporting of Quality of Service (QoS) and Quality of Experience (QoE) is transparent and well-established, and there may be differing opinions on whether further iterations are necessary.

Considering the evolving nature of 5G use cases, the framework form measurement of QoS and QoE can be more accurately assessed the coverage becomes widespread and stable, therefore, perspectives may vary on the need for present amendments. It is important to note that globally, practices differ regarding the regulation of QoS requirements for emerging services. Finding a balanced approach that considers the organic growth of these services without imposing undue restrictions would likely be beneficial for all stakeholders involved.

Q3. **What should be the QoS parameters and corresponding benchmarks for ultra-reliable low latency communication (uRLLC)), and massive machine type communications (mMTC)?**

Submission

It is our understanding that currently, no country has established specific parameters for these services, as the criteria for regulating these technological advancements are still evolving and not yet settled globally. We recommend adhering to global best practices, allowing emerging applications and services to evolve fully. It is essential to let the

processes and service offerings mature and become sufficiently prevalent in the markets before considering any regulatory restrictions. Notably, the Authority has chosen not to regulate many nascent service offerings in the past. Given that these services are enterprise-oriented, they will be governed by service-level agreements. Consequently, we kindly request the Authority to consider keeping these services outside the purview of Quality of Service (QoS) monitoring. This approach ensures a balanced consideration of the evolving landscape while addressing the unique characteristics of these services.

Q4. **Will there be any likely adverse impact on existing consumer voice(VoLTE/VoNR) and data services (eMBB) upon rollout of enterprise use cases of uRLLC or mMTC?**

Submission

No

Q5. **If answer to Question-4 is 'No' then please explain how and if the answer is 'Yes' please suggest measures to ensure minimum guaranteed QoS for voice and data service for consumers.**

Submission

Within the framework of modern 4G and 5G network architecture, enterprise services are delivered through technologies designed to prevent any adverse effects on the generally available best-effort internet. This approach aims to ensure that consumer voice and data services remain unaffected, as they will be persistently provided using dedicated network resources. The implementation of such technologies reflects a commitment to maintaining the quality and reliability of consumer services, while concurrently facilitating the delivery of specialized enterprise offerings. This consideration underscores the importance of balancing the needs of both enterprise and consumer segments within the evolving landscape of network architecture.

Q6. **To achieve QoS and QoE end-to-end, it is essential that all network segments deliver the minimum level of QoS required by respective service, application or use case. In this context, please suggest QoS parameters and corresponding benchmarks for National Long Distance (NLD) and International Long Distance (ILD) segments of the network with supporting global benchmarks.**

Submission

As there is no established global precedent for the regulation or monitoring of Quality of Service (QoS) in carrier services, we emphasize our stance that no modification is necessary in this regard. Carrier services, such as NLD (National Long Distance) and ILD (International Long Distance), operate based on agreed service level agreements (SLAs). The competitive nature of the carrier services market ensures the adherence to SLAs, eliminating the necessity for additional regulatory prescriptions on the NLD/ILD segments. This perspective takes into account the industry's self-regulatory mechanisms and emphasizes maintaining a balance that accommodates the interests of both service providers and consumers.

Q7. **What should be the approach for adoption of 'QoS by Design' framework by the service providers to ensure that new generation wireless networks are planned, implemented and maintained to deliver required level of measurable QoS and QoE ?**

Submission

It is crucial to note that no network is designed to deliver sub-optimal Quality of Service (QoS). The industry maintains the highest standards of QoS and Quality of Experience (QoE) to meet customer expectations and retain their loyalty in a competitive market, where customers can easily switch networks by generating a UPC. The principle of 'Quality by Design' already serves as a guiding principle for telecommunication networks. Consequently, the incorporation of such principles through regulations might be considered redundant. This perspective reflects the industry's commitment to delivering superior services, taking into account the competitive dynamics of the market, and emphasizes the inherent quality-driven approach within the telecommunications sector.

Q8. **What measures are required to accelerate the adoption of AI for management of QoE to reduce consumer complaints protectively and to enable near real time reporting of QoS performance to consumers?**

Submission

AI and ML are evolving technologies with gradually expanding use cases, integrating into operations as deemed appropriate. We anticipate these technologies to become more sophisticated over time. However, the natural progression of these innovations cannot be compelled through regulations. Considering this, we advocate for minimal intervention, allowing the organic development of AI and ML technologies in alignment with industry advancements. This approach respects the ongoing evolution of these technologies while considering the potential benefits and challenges they bring. Fostering innovation with minimal regulatory intervention will support the progress of AI and ML in the telecommunications sector.

Sl. No.	Chapter No.	Regulation No /Clause No.	A proposed provision in the consultation paper	Suggested modification	Justification/ Global references with supporting data points if any
			Draft Regulation Clause-wise comments in the prescribed format		
1	3	3(i)	Provision of service within 7 days of payment of demand note by the applicant Benchmark: 100%	Should be removed from monitoring as redundant. If required can be kept part of the perception of service parameters.	Currently, both wireline and wireless services are provisioned on a demand basis, subject to technical feasibility and there is no need to monitor these legacy parameters.
2	3	3(ii)	Fault incidences (No. of faults per 100 subscribers per month) Benchmark: ≤5	Benchmark should be changed to: ≤7	This benchmark for wireline services should be aligned with the current broadband service benchmarks, which are set at ≤7. This is required due to various challenges beyond TPS's control like a) Difficult geographical characteristics of some regions preventing infrastructure deployment/ rectification. b) Local community issues, including permissions and approvals, can impact the timely restoration of services. c) Re-establishing connectivity to the last mile, especially in remote or underserved areas, can be technically challenging. d) Interruptions in electrical supply can disrupt wireline services and affect fault resolution. e) Physical damage to fibre-optic cables, such as cuts, can lead to service interruptions and require time-consuming repairs

Sl. No.	Chapter No.	Regulation No /Clause No.	A proposed provision in the consultation paper	Suggested modification	Justification/ Global references with supporting data points if any
3	3	3(iv)	Fault repair within five days in Urban areas Benchmark: 100%	Fault repair within seven working days in Urban areas Benchmark: 95%	The 100% benchmark in 5 days is overly stringent. There are many issues that prevent 100% compliance, as mentioned above.
4	3	3(vi)	Fault repair within seven days in rural and hilly areas Benchmark: 100%	Fault repair within seven working days in rural and hilly areas Benchmark: 95%	We recommend maintaining benchmarks at a 95% service restoration rate within 7 working days. This adjustment takes into account the practical constraints beyond the control of TSPs that may prevent achieving 100% compliance within specified time limits. It is essential to acknowledge that in a competitive market, Telecom Service Providers (TSPs) are unlikely to intentionally delay fault repairs. However, imposing benchmarks that are excessively stringent and technically unattainable at all times may pose challenges. Especially in sparsely populated areas, such benchmarks could have a detrimental impact on network roll-out and potentially limit revenue potential. Striking a balance between ensuring quality services and recognizing the diverse operational challenges faced by TSPs, particularly in less densely populated regions, is crucial for fostering sustainable growth and equitable service provision.

Sl. No.	Chapter No.	Regulation No /Clause No.	A proposed provision in the consultation paper	Suggested modification	Justification/ Global references with supporting data points if any
5	3	3(xii)(b)	Response Time to the customer for assistance Percentage of calls answered by the operators (voice to voice) within ninety seconds Benchmark: $\geq$95%	Should not be considered as part of QoS KPIs to be monitored	This parameter should be removed from monitoring due to the following reasons. a) **No Impact on Service Quality:** Human interface does not directly impact the quality of service provided by telecom service providers. b) **Lack of International Standards:** There are no standard international practices or established industry or country norms for monitoring such parameters. c) **Technological Advancement:** The rapid advancement of technology, including AI-driven automation, has reduced the need for traditional voice-based interactions. d) **Automated Systems Enhancement:** Automated systems have played a pivotal role in enhancing efficiency, providing 24/7 availability, and scalability, and ensuring customer reliability, which complements human operator services. e) No comparable precedence in India: This parameter is neither monitored nor enforced by any other regulator across various industries within the country or globally
6	3	3(xiv)	Refund of deposits within 45 days of closures	Refund of deposits within 60 days of closures	We recommend retaining the resolution period at 60 days. Our intention is to maximize our efforts to reach out to the

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					customer and successfully refund their account. Reducing the number of days could negatively impact customer satisfaction, as we've observed that customers often take some time to respond. Therefore, maintaining a 60-day resolution period allows us to ensure the best possible customer experience.
7	4	4(i)	Registration of demand for new wireline connection irrespective of technical feasibility Benchmark: 100%	Should not be considered as part of QoS KPIs to be monitored & reported	This requirement will only increase the compliance burden without significantly benefiting the consumers due to the following reasons: a) Considering the high competition within the telecommunications sector TSPs are already actively expanding their wireline networks, contingent upon technical feasibility and commercial viability. b) Accumulating such details will pose significant challenges for service providers, particularly in areas where network expansion is not planned in the immediate future. c) The license does not mandate 100% roll-out, thus the requirements of mandating TSPs to register demand even in the absence of technical feasibility is unnecessary and will not serve any purpose. d) registering demand without any possibility of providing service can lead to unrealistic expectations and frustration among consumers. Further, The Department of

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					Telecommunications (DoT), through the Sanchar Sarthi portal as part of Citizen Centric Services, is already working to provide consumers with information about the Internet Service Providers (ISPs) available in their respective areas, therefore to facilitate the collection of desired information in areas where no ISP is currently available, we propose that the Authority, either centrally or through a public entity like BSNL, establishes a short code accessible across all networks. This code would allow consumers to register their demands for services that fall outside the coverage of any service provider. Based on the volume of such requests, these can be considered for service provisioning under the Universal Service Obligation Fund (USOF). This approach would enable more efficient data collection and address the needs of underserved areas while minimizing the burden on individual service providers.

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8	4	4(ii)	Requests for Shift of Telephone Connection to be attended within three days Benchmark: 95%	Should not be considered as part of QoS KPIs to be monitored & reported	We recommend that the Authority should continue to include this parameter as part of the perception of service parameters. Shifting wireline connections within an extremely short timeframe, such as the stipulated 3 days, poses several challenges and complexities, as mentioned before. The Authority should strike a balance between ensuring prompt service and recognizing the limitations and challenges in providing wireline services.
9	4	4(iii)	Grade of Service a) Junctions between local Exchanges. Benchmark: 0.002 b) Outgoing junctions from Trunk Automatic Exchange (TAX) to local exchange. Benchmark: 0.005 c) Incoming junctions from local exchange to TAX. Benchmark: 0.005 d) Incoming or outgoing junctions between TAXs.	Should not be considered as part of QoS KPIs to be monitored and reported	We emphasize that the telecommunications industry has witnessed remarkable advancements, characterized by the widespread adoption of all IP-based networks and the deployment of highly advanced infrastructure. These technological strides have substantially enhanced the flexibility and capabilities of telecom networks. The relevance of these parameters may now vary significantly based on the network architecture in use. In contemporary IP-based networks, the traditional notion of "local exchanges" may no longer hold the same weight. The advent of IP-based networks and digital technology has supplanted many of the older analogue and circuit-switched systems, resulting in a more

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			Benchmark: 0.005		adaptable and efficient infrastructure.
					Moreover, it's worth noting that TSPs are already actively monitoring and reporting Points of Interconnection (PoI) congestion. Consequently, the necessity of adhering to conventional parameters has become increasingly obsolete.
10	6	A(i)(a)	(a) % of commissioned cells for which the geospatial service coverage map is available on the service provider's website Benchmark: 100%	Should not be considered as part of QoS KPIs to be monitored and reported	This parameter is not possible to comply with due to the following reasons. a) Ensuring the 100% accuracy of the coverage map to consistently reflect real-time network coverage can be a complex task. Discrepancies may result in customer frustration, dissatisfaction, and an increase in complaints. b) Mandating updates to the map within a strict 2-week timeframe for any addition or removal of cells/sites presents operational challenges. Given the continuous expansion of the network, especially with the rollout of 5G, daily updates to the coverage map on the website may not be operationally feasible. c) The potential for incorrect interpretation of coverage information, such as distinguishing between indoor and outdoor coverage or assessing signal strength, poses a challenge. Coverage maps often provide a high-level overview, which may not

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					capture variations in signal strength, network congestion, or indoor coverage accurately.
					d) Large coverage maps with extensive data can lead to slow loading times, particularly on mobile devices, affecting the user experience.
					e) Instances may arise where a site or cell is technically live in the system but has been forcibly shut down due to local issues or disputes, leading to discrepancies between the map and the actual network status observed by the customer.
					Given these challenges, we propose an alternative approach. Instead of mandating that Telecom Service Providers (TSPs) display geospatial service coverage maps on their websites as part of Quality of Service (QoS) mandates, we recommend leaving this decision to the discretion of the TSPs.

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11	6	A(i)(b)	(b) Accumulated downtime (Cells not available for service) Benchmark: ≤1%	Accumulated downtime (BS not available for service) Benchmark: ≤2%	As an industry we hold a differing perspective on the Authority's rationale for transitioning from Base Station (BS) level to Cell level parameters, citing concerns related to non-availability of cells affecting Quality of Service (QoS concerns. **We submit that measuring cell-level downtime may not accurately reflect overall network availability and service quality. Cell outages may not necessarily impact services directly, particularly when other cells within the same Base Transceiver Station (BTS) can continue serving the affected area. This is especially relevant in rural areas.** Additionally, in proposing more stringent benchmarks, the Authority assumes that technological advancements, LTE and 5G network expansions, improved Operations and Maintenance (O&M) tools, enhanced power availability, and streamlined Right of Way (RoW) processes have substantially mitigated challenges in monitoring and maintaining networks. However, we contend that ground realities may still exhibit significant variations across different regions.
12	6	A(i)(c)	(c) Worst affected Cells due to downtime (Cells not available for service for more than cumulative 24 hrs. in a month) Benchmark: ≤1%	(c) Worst affected BS due to downtime (BS not available for service for more than cumulative 24 hrs. in a month) Benchmark: ≤2%	Considering challenges faced by service providers in ensuring network uptime, especially in remote areas like North East, Assam, Himachal Pradesh, Ladakh, etc., it's crucial to acknowledge the diverse

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					operational landscapes. The Authority itself has recognized these challenges in its recommendations on Improving Telecom Infrastructure in Northeastern States of India dated 22nd September 2023. We have previously detailed these challenges and request their inclusion as part of this comment for brevity. Recognizing the unique circumstances of different regions will contribute to a more balanced and effective regulatory framework.
13	6	A(i)(d)	(d) Reporting of significant network outage to the Authority within 24 hrs of the start of the outage (Services not available in a district or State for more than 4 hours) Note: For significant network outages of > 24 hrs: Proportional rent rebate as per plan charges for affected number of days shall be credited in next bill for post-paid consumers registered in the district. For the pre-paid consumers registered in the district, the validity of their pre-paid accounts as of the outage start date shall be increased	(d) Reporting of significant network outage (> 100 sites down) to the Authority within 24 hours of the start of the outage (Services not available in a district or State for more than 4 hours) Note: For significant network outages of > 24 hrs: Proportional rent rebate as per plan charges for the affected number of days shall be credited in next bill for post-paid consumers registered in the district. For the pre-paid consumers registered in the district, the validity of their pre-paid accounts as of the outage start date shall be increased by an equal number of days.	Regarding the reporting of significant network outages lasting more than 24 hours, we submit that the Authority has already proposed QoS reports covering parameters such as Network availability, Connection Establishment, and Connection Maintenance, to be reported at the State, Union Territory along with LSA levels on monthly basis. We believe that such granular-level reporting already encompasses the monitoring of significant network outages. TSPs are already obligated to comply with the Authority's directive dated 28th March 2023. **Therefore, introducing an additional parameter as part of QoS reporting is unnecessary, especially if it does not have a substantial impact on the quality of service provided to customers in general.**

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			by an equal number of days.		
14	6	A(iii)(a)	(a) Network QoS DCR Spatial Distribution Measure for II. Packet Switched (4G/5G and beyond) network [PS_QSD(96, 96)] Benchmark: $\leq$2%	(a) Network QoS DCR Spatial Distribution Measure for II. Packet Switched (4G/5G and beyond) network [PS_QSD(90, 90)] Benchmark: $\leq$2%	We submit that the Authority has already established one of the most rigorous benchmarks along with a percentile-based calculation methodology for Network QoS Drop Call Rate (Spatial and Temporal Distribution Measures) parameters.
15	6	A(iii)(b)	(b) Network QoS DCR Temporal Distribution Measure for II. Packet Switched (4G/5G and beyond) network [PS_QTD(97,96)] Benchmark: $\leq$3%	(a) Network QoS DCR Spatial Distribution Measure for II. Packet Switched (4G/5G and beyond) network [PS_QSD(97, 90)] Benchmark: $\leq$2%	Any further reduction in the percentage of days and cells in the calculation methodology will make it exceptionally challenging and unachievable for TSPs to meet such stringent benchmarks, considering the operational challenges they face in running and maintaining vast networks. Many of the same are already noted in previous responses. The mandate for QoS reporting and applicability of benchmarks at the State/UT level on a monthly basis makes it exceedingly difficult for TSPs to achieve the 96th percentile criteria, as they have a concession of only 1 day out of 30 days for network maintenance and restoration of such humongous networks. Furthermore,With the increasing rollout of 4G networks, 2G cells have a significant ratio of cells with low traffic volumes. The low volume of traffic handled by these cells means that even a few call drops may result in a high call drop rate in those cells.

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					If the performance of 2G/3G is examined in isolation, it may exhibit a relatively higher call drop value compared to a technology-agnostic or stand-alone 4G value. Additionally, consumers don't associate call drops with any specific technology, whether it's 2G or 4G. Therefore, **the Dropped Call Rate (DCR) parameter should be technology-agnostic and not specific to 2G/3G and 4G/5G**. Imposing separate DCR parameters for 2G/3G and 4G/5G could lead to 2G offering TSP(s) becoming perpetual non-compliant. We reiterate that no regulatory body worldwide has imposed such stringent benchmarks and associated financial disincentives, particularly on commercial telecom service providers.
16	6	A(iii)(d)	(d) DL Packet Drop Rate for Packet Switched Network (4G/5G and beyond) [DLPDR_QSD(96, 96)] Benchmark: $\leq$2%	(d) DL Packet Drop Rate for Packet Switched Network (4G/5G and beyond) Benchmark: $\leq$2%	We propose a broader consideration beyond network reliability and maintainability concerning call muting and muffling. Factors like customers' location, distance from the network site, the number of connected users, handset types, and usage patterns also play crucial roles. Steady or on-the-go usage can impact call quality.
17	6	A(iii)(e)	(e) UL Packet Drop Rate for Packet Switched Network (4G/5G and beyond) [DLPDR_QSD(96, 96)]	(e) UL Packet Drop Rate for Packet Switched Network (4G/5G and beyond) Benchmark: $\leq$2%	Moreover, interference in the TDD band, particularly regarding UL-PDR, poses a significant challenge for Telecom Service Providers (TSPs) in meeting revised benchmarks. Hence, we

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			Benchmark: $\leq$2%		advocate for maintaining the existing calculation methodology, as any further granularity and stringent calculation associated with financial disincentives might impede network expansion in rural and remote areas. Recognizing the multifaceted nature of challenges ensures a more comprehensive approach that considers both network-related issues and the varied user dynamics impacting call quality. Striking a balance between benchmark stringency and the realities of diverse usage scenarios will be pivotal for fostering a robust regulatory framework.
18	6	A(iv)	Messaging: Successful SMS delivery within the service provider's network in less than 20 seconds Benchmark: $\geq$95%	Messaging: Successful SMS delivery within the service provider's own network in less than 20 seconds out of total SMSs that are successfully delivered within the service provider's own network Benchmark: $\geq$95%	Compliance with the new parameter in its current form is deemed technically unfeasible. Instead, we propose generating a report for SMS messages originating and successfully delivered within our network. Generating reports for off-net SMS, however, presents technical challenges, as these messages do not land on terminating Telecom Service Providers' (TSPs) Short Message Service Centers (SMSC), and the delivery report for such SMSs is within the purview of the originating TSP. Furthermore, providing such details at the State/Union Territory level is constrained by limitations within our SMSC and core network equipment. These systems lack geographical location details necessary for

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					reporting at this level. Recognizing these technical constraints is crucial for ensuring a practical and realistic approach to compliance, considering the intricacies involved in SMS message routing and reporting. The report seems bit difficult to produce for SMS messages that remain undelivered as the reasons for delivery failure may include factors beyond the control of TSPs such as: 1. **Customer Unreachable:** SMS delivery may fail when the customer's mobile phone is in a no-network zone (e.g., in-flight) or switched off or no-network coverage area etc. 2. **Dual SIM Handsets:** SMS delivery may be delayed until the customer is using the relevant SIM card (voice calls), especially in dual SIM handsets. 3. **Non-Operational Numbers**: Although an SMS is initiated by the user or the system, it may not be delivered if the recipient's number is not in use, disconnected, suspended, or in similar states. Thus, if at all this parameter is to be included, it can be done only in the following manner = (Total SMSs originated in A network and Successfully delivered in 20 sec) / (Total SMSs originated in a network and Successfully delivered)

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19	6	B(vii)	Resolution of billing/charging complaints within four weeks Benchmark: 100% within 4 weeks	Resolution of billing/charging complaints within six weeks Benchmark: 100% within 6 weeks	1. The billing process typically occurs within 30 days for a monthly invoice. In cases where discrepancies related to billing adjustments or waivers arise, the baseline date for reflecting these changes is set for the next invoice cycle, allowing customers the opportunity to validate the adjustments. 2. As customer-centric organizations committed to service assurance, TSPs actively close the loop on each billing-related case with the customer until the next bill is generated and to ensure that all issues are satisfactorily resolved. 3. However, it's important to note that a small percentage of cases may take longer to resolve, extending beyond 28 days or 4 weeks. Therefore, we recommend allowing a 100% resolution rate within 6 weeks to accommodate these exceptional cases and also in line with the benchmarks for wireline services.
20	6	B(ix)(b)	Response Time to the customer for assistance Percentage of calls answered by the operators (voice to voice) within ninety seconds Benchmark: $\geq$95%		We request for withdrawal of monitoring of the percentage of calls answered by operators (voice to voice) basis the detailed reasoning provided on the same parameter in the previous section.

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21	6	B(xi)	Refund of deposits within 45 days of closures	Refund of deposits within 60 days of closures	1. We recommend retaining the resolution period at 60 days. Our intention is to maximize our efforts to reach out to the customer and successfully refund their account. 2. Reducing the number of days could negatively impact customer satisfaction, as we've observed that customers often take some time to respond. Therefore, maintaining a 60-day resolution period allows us to ensure the best possible customer experience.
22	7	1	Registration of demand for wireless services in case services cannot be provided due to non-availability of wireless service	Should not be considered as part of QoS KPIs to be monitored & reported	Please refer to our response under clause 4(i)
23	7	2	Service Coverage (i) Signal strength at street level shall be as specified in TSTP for rollout obligation issued by the Central Government for respective technology (ii) Signal strength in-vehicle shall be up to 10dBm below the street level signal strength for respective technology (iii) Signal strength for indoor as per applicable standard or as per	Should not be considered as part of QoS KPIs to be monitored & reported	1. We suggest this parameter should not be considered as part of QoS monitored and reported rather this can continue to be part of the perception of service parameters in view of the following; a) TSPs are already complying with the TEC standards related to service coverage and signal strength at different levels (outdoor/indoor/in-vehicle) and the same are duly verified by the LSA Units of DoT at the time of verifying and certifying compliance of roll-out obligations by TSPs in adherence to license conditions and NIA for spectrum auction.

Sl. No.	Chapter No.	Regulation No /Clause No.	A proposed provision in the consultation paper	Suggested modification	Justification/ Global references with supporting data points if any
			rollout obligation for respective technology		b) Further, measuring in-vehicle and indoor signal strength accurately can be technically complex. Indoor signal strength can vary widely depending on the building's size, construction, and location or below ground level. It may not be practical to set uniform benchmarks for all indoor environments.
					c) Customers have the option to choose from available solutions such as In-Building Solutions (IBS), Wi-Fi calling, Offloading data through Cellular Enhancement Products (ODCEP), Fixed Wireless Access (FWA), and more to improve their indoor coverage.
					2. In a competitive telecom market, service providers have an incentive to improve indoor coverage to attract and retain customers. Market forces might be sufficient to drive investments in this area without the need for regulatory mandates. Rather, regulatory authorities may encourage the adoption of such technologies to enhance overall network quality and customer satisfaction.
					3. Further, for operator-assisted drive tests, a Signal-to-Noise plus Interference Ratio (SNIR) value greater than -6 should be considered, compared to the current practice, where many good

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					samples with SINR values greater than 0 are left out and cannot be measured for LTE and advanced networks. We recommend that our earlier submissions be taken into account when finalizing the new QoS regulations in this regard.
24	7	4	Point of Interconnection (POI)performance for interconnection between packet-switched networks(4G/5G) at the LSA level (i) Latency<30ms (ii) Jitter<20ms (iii) Packet loss<1%	Should not be considered as part of QoS KPIs to be monitored & reported	We reiterate that, as of the current state, these parameters can only be measured within the individual service provider networks and not between different service providers. Thus, end-to-end measurement of these parameters across operators, irrespective of the type of POI (IP or TDM), is not technically feasible.
25	9	1	Latency Benchmark: $\leq$100 ms (in 4G and 5G networks) & <50 ms in wireline network	Latency Benchmark: $\leq$250 ms (in 4G and 5G networks) & <120 ms in wireline network	While revising the benchmarks, the Authority has referred to international examples where individual telecom service providers have achieved ultra-low latency. However, it's essential to note that such stringent benchmarks have not been widely prescribed by regulators worldwide. Moreover, we believe that the achievement of such benchmarks should primarily be driven by market forces to attract and retain customers. When recommending these stringent benchmarks, the Authority should also consider

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					various operational challenges and factors: a) **Backhaul Network Challenges:** Achieving higher benchmarks, regardless of deploying advanced packet core networks with LTE, LTE-Advanced, or 5G technology, depends on the quality and capacity of the backhaul network. Challenges such as challenging terrain, Right of Way (RoW) issues, the cost of fiberizing base transceiver stations (BTS), local issues, and more can impact network performance. b) **Routing Variations:** Depending on route occupancy and network conditions, traffic may take different paths, such as the shortest or longest route. This variation in routing can lead to latency differences. c) **Submarine Cable Damage:** In the event of damage to submarine cables or major fibre cuts, traffic may be rerouted through alternative paths, resulting in higher observed latency. d) **Network Congestion:** High numbers of connected users and a vast subscriber base, especially when compared to other nations, can lead to network congestion,

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					resulting in higher observed latency.
					e) **Interference:** Wireless networks, in particular, can suffer from interference, leading to latency variations. Interference may arise from physical obstacles, competing wireless signals, or environmental factors.
					f) **Cloud-Based Services**: The use of cloud-based services can introduce additional latency, as data needs to travel to and from remote cloud servers. The geographical location of these servers can impact latency.
					g) **Decisions outside the purview of TSP**- It is pertinent to mention here that in many cases the decisions taken by non-licensees like CDN providers also affect the latency. For instance, a content provider's decision to have or not have CDN in a TSP network will impact the latency.
					h) **Security Measures**: Security measures like firewalls, intrusion detection systems, and encryption can introduce processing delays, affecting overall latency.
					Given that latency is measured from the user reference point at the Point of Presence (POP) or Internet Service Provider (ISP)

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					gateway node to the international gateway (IGSP/NIXI), we recommend maintaining the same benchmarks as <250ms for wireless networks and <120ms for wireline networks.
26	9	2	Jitter Benchmark: $\leq$50 ms (in 4G and 5G networks) & <40 ms in wireline network	Should not be considered as part of QoS KPIs to be monitored and reported	Jitter is a measure for variance in latency and this micro-level parameter is used only for fault analysis, whereas latency is a self-sufficient parameter to give an insight into the QoE of the user. Therefore, the requirement does not serve any purpose.
27	9	5	Minimum download and upload speed against the minimum subscribed speed in offered data plans. Benchmark: >80% of the minimum speed for wireless and 100% of the minimum speed for wireline	Minimum download and upload speed against the minimum subscribed speed in offered data plans. Benchmark: >80% of the minimum speed for wireline	1. Regarding the minimum download speed for wireless networks, we would like to emphasize that neither TSPs prescribe any minimum download speed nor is it possible to guarantee any minimum speed in the case of wireless networks. 2. The speed experienced by a customer on a wireless network depends on various factors, including the customer's handset, location (indoor or outdoor), distance from the cell site, the number of connected users, the type of website or app being accessed, whether the website is on IPv6 or IPv4, topography, backhaul connectivity, various topographical issues and much more. These factors are not under the control of telecom service providers. 3. Given the points mentioned above and considering the industry's submission of the

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					consultation paper for wireless data services, we kindly request the authority to remove the proposed benchmarks from the QoS regulations.
					4. Further, for the benchmarks of 100% for the minimum download speed in the case of wireline networks, the calculation methodology appears to be erroneous. The authority is proposing 100% benchmarks based on the average of the lower 10% of all respective test calls. This approach seems incorrect if the benchmark is set at 100%.
					5. Nevertheless, considering the challenges highlighted for network latency and its applicability to wireline networks where the speed observed may exhibit some variation, we recommend that the authority retains the existing benchmarks of >80% in the case of wireline networks.
28	10	(i)	Registration of demand for new wireline broadband connection irrespective of technical feasibility Benchmark: 100%	Should not be considered as part of QoS KPIs to be monitored & reported	Please refer to our response under clause 4(i)
29	12 & 13	12.1& 12.2 & 13.1	(1) The service provider shall maintain documented process of online collection and processing of data	The QoS data should be prepared under with a well-documented process. Further the data should be submitted to TRAI	1. The QoS data is prepared post extracting and processing the primary data from multiple nodes/sources spread over the geography.

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			for each QoS parameter specified by the Authority under regulation 3, regulation 4, regulation 6, regulation 7, regulation 9 and regulation 10, as applicable, and submit to the Authority, within sixty days of notification of these regulations, the documented online process of collection and processing of data of each QoS 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 any aggregation, transformation or computations applied including record keeping procedure.	through an automated system at TSP's end.	2. This processing involves multiple iterations, tagging exercises through automated processes using the formula prescribed by TRAI to generate the report. 3. Additionally, post processing, the raw reports and coding is verified for exception identification and rectification, if required. 4. Therefore, as already implemented, it is possible to automate the report submission with processed data. However, it is not possible to provide access to primary data. 5. Therefore, the requirement of automated access to primary data is not possible to meet due to above mentioned technical reasons and should be removed from the Regulations. 6. It is also pertinent to mention here that there are no international precedents of Regulator collecting primary network data from the TSPs.

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			(2) Every service provider shall maintain and provide online access of complete and accurate records of primary and processed data relating to the compliance of benchmark of each QoS parameters specified in regulations 3, regulation 4, regulation 6, regulation 7, regulation 9 and regulation 10, as applicable, in such manner and in such formats as may be directed by the Authority, from time to time.

13.1   (1)Every service provider shall create secure online system within six months of notification of these regulations for collection of primary data, its processing, generation and submission of online compliance reports to the Authority with online access of | | |

Sl. No.	Chapter No.	Regulation No /Clause No.	A proposed provision in the consultation paper	Suggested modification	Justification/ Global references with supporting data points if any
			required supporting primary data in respect of each QoS parameters specified under regulation 3 , regulation 4, regulation 6, regulation 7, regulation 9 and regulation 10 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.		
30	13	13. 2	(2) The benchmark of each QoS parameters specified in sub-regulation (1) shall be measured, reported, and complied at State or Union Territory (UT) and License Service Area level, as may be specified by order or direction issued by the Authority time to time: Provided that the Authority may notify list of districts and QoS	The benchmark of each QoS parameters specified in sub-regulation (1) shall be reported, and complied at License Service Area level only	1. The TSP license is issued on LSA-basis and the network is also planned and designed on network basis. 2. As many LSAs spawn over multiple states and some cater to only part of a state, it is not possible to re-align the network to meet such requirements. 3. Thus, the QoS Regulation requirement should continue to be for LSA ONLY. Accordingly, we request you to remove this requirement from the Regulations.

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			parameters for measurement, reporting and compliance of QoS benchmarks based on identification of areas experiencing degraded QoS.		
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