



Regulations 8 (3) of the Telecommunications (Consumer Protection) Regulations 2020 provides for *“the Commission on its own initiative at any time and after consulting with service providers and consumers that may be affected, make recommendations to the Minister that amendments be made to subregulation (1) or the Schedules, through the Minister’s exercise of his powers under subregulation (2)”* to make recommendations for the Minister *“to add, remove, or revise any quality of service standard applicable to any of the telecommunications services.”*

After consultation with the Guyana Telephone & Telegraph Co. Ltd (GTT) and upon receipt of a directive from the Honourable Prime Minister Brigadier (ret’d) Mark Anthony Phillips MSS MP, the line minister and for whom the Public Utilities Commission (Commission) serves in an advisory capacity, the Commission determined that it was necessary to review the Quality of Service as contained in Schedules 1 and 2 of the Telecommunications (Consumer Protection) Regulations 2020.

To date, the following steps in the consultative process have been completed:

1. On 16th May 2022, the Commission issued its Consultative Docket CP-1/2022 (https://www.puc.org.gy/pucdocs/Miscellaneous/2022%20Pub%20Cons_TQOSS%20II.pdf), inviting stakeholders, including the Telecommunications Service Providers and the Guyana Consumer Association to submit their comments on the Commission’s proposed amendments to Schedules 1 and 2 of the Telecommunications (Consumer Protection) Regulations 2020.
2. The Commission received and processed a number of responses from the stakeholders comprising key personnel from the public and private sectors, CARICOM Secretariat, the National Data Management Authority (NDMA) which has the responsibility for the implementation of the Guyana's eGovernment agenda; the Guyana Consumers Association (GCA); Green Gibraltar Inc.; Guyana Telephone and Telegraph Company Inc. (GTT) and U-Mobile (Cellular Inc. and consumers. A summary of the responses received can be found at <https://www.puc.org.gy/pucdocs/Miscellaneous/2022%20Summary%20QoS%20Response.pdf>
3. The Commission having considered all comments, suggestions and feedback from the stakeholders has compiled this document which includes the Commission’s recommendations on Quality of Service which will in turn serve as a guide to the Prime Minister for amendments to Schedules 1 and 2 of the Telecommunications (Consumer Protection) Regulations 2020. Please note that this exercise warranted the revision of some of the quality of service parameters definitions, and same can be found in the glossary section to this document.

REVISED GLOSSARY OF TERMS

“**Availability**” represents the percentage of the time in which the network resources are available to the consumer (including the base stations, base transceiver stations (BTS)).

“**Broadband Internet Service**” is the transmission of bandwidth data over a high-speed internet connection;

“**Call Connection Success Rate**” is the fraction of attempts to place a telephone call resulting in a successful connection to the dialed number;

“**Call Set Up**” is the process of establishing a virtual circuit across a telecommunication network;

“**Customer Care Accessibility**” dictates that all calls to the center must be answered by an individual or automated customer care device (at no time the line should not be engaged). Alternatively, all calls to the center must be processed;

“**Data**” is information that is transmitted in a telecommunications circuit by means of an electrical signal;

“**Data Service Access Time**” is the maximum time taken for data service connections to materialize;

“**Fixed Telephone Line**” is the landline or fixed line telephone;

“**Jitter**” represents the packets from the source will reach the destination with different delays. This variation in delay is known as jitter and can seriously affect the quality of streaming audio and/or video;

“**Latency**” is the amount of time it takes for a small piece of data to travel to one point and return a response to the user’s device;

“**Mobile Voice Service**” is the ability to communicate through their mobile devices;

“**Packet Loss**” represents the percentage of packets lost to the total packets transmitted between two designated Customer Premise equipment (CPE)/Router Ports;

“**Packet Throughput**” represents the amount of data or information which is received by the consumer within a specific period of time;

“**Reported Fault**” is the number of network faults which are reported and recorded;

“**Service Coverage**” represents the coverage of a radio station is the geographic area where the station can communicate;

“**Signal Strength**” is the wireless signal power level received by the wireless client;

“**Supply Time for Initial Connection**” is the duration from the instant of a valid service order received by a direct service provider to the instance of a working service made available for use;

“**Unreported Fault**” is the number of unreported faults, but which are recorded by the service provider.

REVIEW AND RECOMMENDATIONS

Schedule 1 (2) Residential narrowband (voice) access

The following represents the Commission’s revised standards and new proposed QoS parameters and standards for the residential narrowband (voice) access service.

Quality of Service Parameter	PUC’s Proposed Standards	PUC's Recommended Standards
% of unreported faults cleared within 24 hours	80	80
% of unreported faults cleared within 48 hours	90	90
% of unreported faults cleared within 96 hours	98	98
% of unreported faults cleared within 120 hours	100	100
% of reported faults cleared within 24 hours	75	75
% of reported faults cleared within 48 hours	85	85
% of reported faults cleared within 96 hours	98	98
% of reported faults cleared within 120 hours	100	100%
Reconnection of service within 3 hours after payment of overdue amounts.	90%	90%
Customer Care Availability	100%	95%

(1) **Reported and Unreported fault clearance**

Concerns were raised regarding the topography of Guyana and delays associated with subscribers’ inaccessibility to facilitate access. Stakeholder suggestions included lower standards, longer timeframes and faults clearance standards to be categorised by urban and rural areas.

Recommendation

The Commission having considered all comments received, is of the view that the apparent stringent standards as set out in the Regulations should be amended to capture timeframes which are reasonable and attainable by the service providers.

(2) Reconnection of Service after payment of overdue amounts

Stakeholders' suggestions indicate a preference for the amendment of this parameter to reflect reconnection of service within three business hours, the standard should be lowered, and reconnections must be enforced immediately after service providers verify that the payment of any overdue amount is satisfied.

Recommendation

The Commission having considered all of the comments and suggestions received especially as it relates to automatic reconnections determined that its proposed standard is reasonable and attainable for the verification of payment and the reconnection of services and as such this proposed standard should remain as is.

(3) Customer Care Accessibility

Concerns were raised by the service providers regarding the proposed standard and suggestions were made that the standard should be lower than the Commission's proposed standard.

Recommendation

The Commission in determining its recommended position is cognizant of the fact that consideration should be made for consumers who disconnected their calls before the timeframe has expired. Therefore, the Commission has amended and reduced its proposed position of 100% to 95%.

Schedule 1 (6) Broadband Internet services for residential customers

The Commission's proposed and recommended QoS Parameters and Standards for fixed broadband internet service are as follows:

Quality of Service Parameters	PUC's Proposed Standards	PUC's Recommended Standards
Availability	Greater than or equal to 99%	Greater than or equal to 99%
Packet Loss	Less than 2%	Less than 2%
Packet Throughput	Greater than or equal to 90%	Greater than or equal to 90%
Latency	Less than or equal to 70 milliseconds	Less than or equal to 140 milliseconds
Jitter	Less than or equal to 30 milliseconds	Less than or equal to 30 milliseconds
Signal strength	Greater than or equal to -85 decibels	REMOVED
Reconnection of service within three hours after payment of overdue amounts.	90%	90%
Customer Care Accessibility	100%	95%
Data Service access time	Less than or equal to 5 seconds	REMOVED

The Commission having reviewed comments and suggestions by stakeholders and in particular the service providers has determined that the following proposed standards be further amended.

(1) **Latency**

The use of technology plays an integral role in all spheres of life and the Commission took its cue from what obtains in other jurisdictions as it relates to latency. Latency is the delay of the incoming data, and it is the measurement of the time which it takes data to travel between two points. To this end the Commission determined that latency be increased to less than or equal to 140 milliseconds.

(2) **Signal Strength**

The Commission having reviewed the proposed signal strength parameter has verified that this parameter is only applicable to wireless transmission technologies. Therefore, this proposed parameter will be removed.

(3) **Customer Care Accessibility**

Concerns were raised by the service providers regarding the proposed standard and suggestions were made that the standard should be lower than the Commission’s proposed standard. The Commission in determining its recommended position is cognizant of the fact that consideration should be made for consumers who disconnected their calls before the timeframe has expired. Therefore, the Commission has amended and reduced its proposed position of 100% to 95%.

(4) **Data Service Access Time**

The Commission after its own deliberations took into account the fact that consumers’/end users’ devices will operate at various rates of speed when connected to the internet. Additionally, data will be sourced from the internet and the rate at which that device operates will be beyond the service providers’ ability to measure the rate at which the end user device retrieves that sourced data. The service providers have shared the same sentiments regarding this parameter and the Commission determined that this proposed parameter should be removed.

Schedule 1 (7) Fixed Wireless Broadband internet services for residential customers

The Commission’s proposed and recommended QoS Parameters and Standards for fixed wireless broadband internet services for residential customers are as follows:

Quality of Service Parameter	PUC’s Proposed Standard	PUC’s Recommended Standards
Availability	Greater than or equal to 99%	Greater than or equal to 99%
Packet Loss	Less than 2%	Less than 2%
Packet Throughput	Greater than or equal to 90%	Greater than or equal to 90%
Latency	Less than or equal to 70 milliseconds	Terrestrial: less than or equal to 100 milliseconds
		Low Orbit Satellite: less than or equal to 140 milliseconds
		Dual Station Satellite: less than or equal to 600 milliseconds
Jitter	Less than or equal to 30 milliseconds	Less than or equal to 30 milliseconds
Signal strength	Greater than or equal to -85 decibels	Greater than or equal to -85 decibels

Reconnection of service within three hours after payment of overdue amounts	90%	90%
Customer Care Accessibility	100%	95%
Data Service Availability	Greater than or equal to 96%	REMOVED
Data Service access time	Less than or equal to 5 seconds	REMOVED
Supply time for initial connection (urban)	6 days	6 days
Supply time for initial connection (rural)	20 days	20 days
% of technical complaints resolved within 12 hours	85	85
% of technical complaints resolved within 24 hours	95	95
% of technical complaints resolved within 36 hours	99	99
Number of billing errors per 1000 bills	3	3
% of billing complaints resolved within 2 weeks	90	90
% of billing complaints resolved within 3 weeks	100	100

The Commission having reviewed the comments and suggestions from the stakeholders and service providers has noted the concerns and reservations raised by them on a number of the parameters and standards as proposed which are highlighted below and it has amended its proposed position.

(1) **Customer Care Accessibility**

Concerns were raised by the service providers regarding the proposed standard and suggestions were made that the standard should be lower than the Commission’s proposed standard. The Commission in determining its recommended position is cognizant of the fact that consideration should be made for consumers who disconnected their calls before the timeframe has expired. Therefore, the Commission has amended and reduced its proposed position of 100% to 95%.

(2) **Latency**

The use of technology plays an integral role in all spheres of life and the Commission therefore took its cue from what obtains in other jurisdictions as it relates to Latency. The Commission after taking into consideration the comments from the service providers and further research

to this end has conceded to amend its proposed standard to include the mode of technology used to provide the service and to amend the average milliseconds for latency delay as applicable to each mode of technology.

(3) **Data Service Availability**

The Commission in its further review of its proposed parameters recognizes that Data Service Availability and Availability speak to the same definition as pointed out by service providers and therefore Data Service Availability parameter will no longer be considered in the Commission’s recommendations.

(4) **Data Service Access Time**

Service providers indicated in their responses that it is difficult to measure Data Service Access Time on the internet and therefore, recommended that this standard be removed. The Commission took into account that it is the obligation of the service providers to monitor and report on any QoS as set by the Commission and after considering the justification for such removal as put forward by the service provider, the Commission has determined that it is prudent to remove the parameter.

Schedule 2 (2) Mobile Broadband Internet Services

The Commission’s proposed and recommended QoS Parameters and Standards for Mobile Internet Services are as follows:

Quality of Service Parameters	PUC’s Proposed Standards	PUC’s Recommended Standards
Availability	Greater than or equal to 99%	Greater than or equal to 99%
Packet Loss	Less than 2%	Less than 2%
Packet Throughput	Greater than 90%	Greater than 90%
Latency	Less than or equal to 20 milliseconds	Less than or equal to 150 milliseconds
Jitter	Less than 5 milliseconds	Less than 6 milliseconds
Reconnection of service within three hours after payment of overdue amounts.	90%	90%
Customer Care Accessibility	100%	95%

Service Coverage	Greater than or equal to 75 decibel milliwatts (for indoors), Greater than or equal to 85 decibel milliwatts (for inside vehicle), Greater than or equal to 95 decibel milliwatts (for outdoors)	Removed
Call connection success rate	Greater than 99%	Removed
Data Service access time	Less than or equal to 5 seconds	Removed
Data Access success rate	Greater than or equal to 99.9%	Removed
Data Service Drop rate	Less than or equal to 1%	Removed

The Commission having reviewed the comments and suggestions from the stakeholders and service providers has noted the concerns and reservations raised by them on a number of the parameters and standards as proposed and are highlighted below and has amended its proposed position.

(1) **Latency**

The use of technology plays an integral role in all spheres of life and the Commission took its cue from what is obtains in other jurisdictions as it relates to latency. Latency is the delay of the incoming data, and it is the measurement of the time which it takes data to travel between two points. To this end the Commission determined that latency be increased to less than or equal to 150 milliseconds.

(2) **Jitter**

Jitter which is often caused by network congestion and route changes essentially creates longer delays for data packets to arrive. This is noticeable in the quality of video and audio calls. Consumers will notice unintelligible audio and low-quality video calls if jitter reaches a certain level. Jitter congestion on a 3G network will be 0 to 10 milliseconds and whereas, 0 to 6 milliseconds on a 4G network. The Commission in its proposed standard took into consideration the minimum jitter allowable which will not negatively impact the consumers' service. After the review of comments and suggestions this standard was further amended.

(3) **Customer Care Accessibility**

Concerns were raised by the service providers regarding the proposed standard and suggestions were made that the standard should be lower than the Commission's proposed standard. The Commission in determining its recommended position is cognizant of the fact that consideration should be made for consumers who disconnected their calls before the timeframe has expired. Therefore, the Commission has amended and reduced its proposed position of 100% to 95%.

(4) **Service Coverage**

The Commission elected to remove this parameter since service coverage is affected by different variables such as environment and difference in technologies for which the operator has little control and therefore it was determined that it would be unreasonable for the Commission to require same to be measured.

(5) **Call Connection Success Rate**

After reviewing the comments relating to the call connection success rate parameter, the Commission after taking into consideration the factors which may influence this parameter, such as the fact that calls made using data are mainly facilitated using OTT (Over-The-Top) applications, which are not within the control of the service providers. The Commission has elected to remove this parameter due to the lack of ability to measure by operators.

(6) **Data Service Access Time and Data Access Success Rate**

The review process highlighted the similarities and correlation between these two parameters and availability. The Commission therefore determined that to include these two parameters would not add value and it would be duplicitous to require operators to generate the same data for data service access time, data access success rate and availability. The Commission, therefore, removed the data service access time and data access success rate parameters.

(7) **Data Service Drop Rate**

Consideration was given to the fact that availability takes into account for drop rate or loss of data with the standard for the parameter availability being greater than or equal to 99%. Therefore, it is assumed that there will be a drop rate or unavailability of data equal to or less than 1%. The Commission is of the view that both these parameters are not necessary and it has determined that this parameter be removed.

NEXT STEPS

The success of this consultative process could not be realised without the invaluable feedback from its stakeholders, Agency Heads and Consumers.

It is now the intention of the Commission to share our recommendations with the Office of the Prime Minister which will in turn either engage us in further consultation or adopt our recommendations for the legislative process towards the amendment of Schedules 1 and 2 of The Telecommunications (Consumer Protection) Regulations 2020.

For further information on PUC, please visit our website at <https://www.puc.org.gy/> or our Facebook page <https://www.facebook.com/pucguyana> for updates.

Dated this the 12th of August 2022.