



Draft Outage Reporting and Mitigation Regulations for the Electronic Communications Sector in The Bahamas

Consultation Document

ECS 12/2023

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1. Introduction

In this Consultation Document, the Utilities Regulation and Competition Authority (“URCA”) presents for consultation its Draft Outage Reporting and Mitigation Regulations for the Electronic Communication Sector in The Bahamas (“the Regulations”). This consultation is a workstream within the scope of URCA’s Review of the Quality-of-Service (“QoS”) Framework for the Electronic Communications Sector (“ECS”) in The Bahamas as set out in URCA’s 2023 Annual Plan.¹ URCA invites and welcomes written responses from stakeholders, licensees and other interested persons regarding the proposed Regulations and Consultation Questions set out herein.

URCA is the independent regulator and competition body for the ECS, which includes fixed and mobile networks and services, broadcasting, and the management of spectrum and numbering resources. URCA’s powers and responsibilities for the ECS are found in the Communications Act, 2009 (“Comms Act”). As the regulator for the ECS, URCA is mandated to advance the main objectives of the electronic communications sector policy (“ECS Policy”).²

One of the main ECS Policy objectives requires URCA to further the interests of consumers by promoting competition and in particular (i) enhancing the efficiency of the Bahamian ECS and the productivity of the Bahamian economy; and (ii) promoting investment and innovation in electronic communications networks and services. URCA is mandated by the other main objective of the ECS Policy to further the interests of persons in The Bahamas in relation to the ECS by (i) promoting affordable access to high quality networks and carriage services in The Bahamas; (ii) maintaining public safety and security; and (iii) promoting availability of a wide range of content services which are of high quality.

The Comms Act empowers URCA to, amongst other things, issue regulations and other measures for the purposes of carrying into effect the ECS Policy objectives in a proportionate, transparent, fair, and non-discriminatory manner. Having regard to the foregoing principles, URCA issues this Consultation Document.

1.1 Background of the Consultation

URCA is cognizant that consumers in The Bahamas and globally are becoming increasingly dependent upon electronic communications services for both personal and commercial use, and accordingly consumers expect to receive high quality electronic communications services from licensees in The Bahamas. In recent times, URCA has observed that there has been increased public concern over the reliability and quality of electronic communications services in The Bahamas due to, amongst other things, frequent outages and/or disruptions to electronic communications networks and services. Additionally, URCA observed that many participants across the various focus group meetings conducted as a part of URCA’s Public Consultation on the Demand for Enhanced Internet Connectivity and 5G in The Bahamas expressed concern with respect to:

¹ See pg. 86 of URCA’s 2023 Annual Plan available at <https://www.urbahamas.bs/publications/urca-04-2023-annual-report-2022-2023-annual-plan/>

² See section 4 of the Communications, Act, 2009.

- (i) the quality, reliability, availability, or lack thereof of public electronic communications networks and services³ in The Bahamas; and
- (ii) the perceived inability of Bahamian licensees to consistently meet the demands of their respective businesses and/or mandates.⁴

URCA notes that licensees holding an Individual Operating Licence (“IOL”) are required to, amongst other things, notify URCA of any unplanned interruption which prevents them from carrying out their obligations under their respective IOLs as soon as reasonably practicable.⁵ At the same time there is no obligation in the respective IOLs or otherwise mandating such licensees to notify URCA of any planned interruptions which prevents them from carrying out their obligations to customers. URCA considers that the current outage reporting regime in The Bahamas does not promote timely and standardized notifications of planned and unplanned outages by licensees to URCA. As such, one of URCA’s objectives is to remedy this and other inadequacies in the reporting of outages to URCA by way of the proposed Regulations.

URCA notes that the IOL also requires licensees to take reasonable steps to maintain the continuity of their respective public electronic communications networks and carriage services; take appropriate measures to safeguard the security and integrity of their respective carriage services, including, where relevant and necessary, in conjunction with their respective Networks; and to take all reasonable steps as are required to prevent and resolve unplanned interruptions to the provision of their respective Carriage Services and the operation of their respective Networks .⁶

URCA also recognises that there may be licensees that have established public electronic communications networks and provide public electronic communications services in The Bahamas pursuant to a Class Operating Licence Requiring Registration (“COLRR”). Holders of a COLRR are not required to report either planned or unplanned disruptions to the provision of their respective Carriage Services and the operation of their respective Networks to URCA. URCA considers this to be an information inadequacy that must be addressed. URCA notes that the COLRR requires licensees, amongst other things, to use reasonable endeavours to provide Carriage Services to a standard that could be reasonably expected by Subscribers, having regard to the nature of the services and any advertising or sales information provided by the Licensee.⁷

URCA is concerned about the risks and harm to society, the economy and public safety and security due to frequent and prolonged outages of public electronic communications networks and public electronic communications services. In this regard, it is crucial for licensees to make necessary investments in their respective networks and services, and embrace best practices that promote the availability, performance,

³ See URCA’s proposed definition of the public electronic communications networks and public electronic communications services in section 4.1 of the Consultation Document below.

⁴ See section 3.1 of URCA’s Public Consultation on the demand for enhanced internet connectivity and 5G in The Bahamas ECS 06/2023 available at <https://www.urcabahamas.bs/consultations/ecs-06-2023-5g-public-consultation/>

⁵ See Condition 23.2 of the IOL.

⁶ See Conditions 27.1, 13.6 and 23.3 respectively of the IOL.

⁷ See Condition 1.19 of the COLRR.

or functionality of their networks and services, where they are not already doing so. Accordingly, URCA proposes to impose a duty on both categories of licensees to take appropriate and proportionate steps to mitigate and remedy outages, and to adopt internal measures that promote the availability, performance, or functionality of their respective networks and services.

URCA considers that the imposition of such duty will (i) supplement the existing obligations specified in Conditions 13.6, 23.3 and 27.1. of the IOL and 1.19 of the COLRR. To date, URCA has not published any guidelines relating to the internal measures that licensees should consider implementing to (i) mitigate and reduce outages; and (ii) promote the continuity of their networks and services. Therefore, URCA considers that publishing guidelines setting out a non-exhaustive list of measures that licensees should consider implementing to prioritize the availability and reliability of their networks and services if they are not doing so. URCA proposes to consider such guidelines when determining whether licensees have complied with their duty to mitigate and remedy outages.

Having regard to the foregoing, URCA considers that the proposed Regulations will address the inadequacies and/or gaps in the current QoS Reporting Framework, and advance the main objectives of the ECS Policy by:

- (i) requiring licensees to notify URCA of both planned and unplanned outages in a timely and standardized manner;
- (ii) ensuring that URCA receives necessary information to assess the magnitude and frequency of both planned and unplanned outages;
- (iii) facilitating URCA's monitoring of licensees' service restoration activities;
- (iv) ensuring that URCA is able to identify common recurrent issues potentially impacting the functioning of public electronic communications networks and services in The Bahamas;
- (v) ensuring that licensees conduct in-depth analysis of the root causes of unplanned outage and take necessary steps to mitigate and remedy outages; and
- (vi) setting out a non-exhaustive list of measures that URCA may consider in determining whether a licensee has complied with its duty to mitigate and remedy outages.

1.2 Objectives of the Consultation

URCA is seeking views from licensees, stakeholders, and other interested persons on the matters set out in this Consultation Document which, in the opinion of URCA, are of public significance. URCA considers the following to be the key objectives of this consultation process:

- to set out URCA's proposed Regulations;
- to set out URCA's rationale for the implementation of the proposed measures;
- to set out URCA's findings on international best practices on outage reporting and the current outage reporting practices of major Bahamian licensees; and
- to invite written comments from stakeholders, licensees, and other interested persons.

1.3 How to respond to this Consultation Document

URCA invites responses on this Consultation Document from all stakeholders, licensees and interested persons. Responses must be submitted to URCA by **5 p.m. on Wednesday, 15 November 2023.**

Written responses or comments on this Consultation Document should be sent to URCA's Director of Electronic Communications, either:

- by hand, to URCA's office at Frederick House, Frederick Street, Nassau; or
- by mail to P.O. Box N 4860, Nassau, Bahamas; or
- by email, to info@urcabahamas.bs.

Persons may obtain copies of this document by downloading it from the URCA website at www.urcabahamas.bs.

URCA reserves the right to make all responses available to the public by posting responses online on its website. If a response is marked confidential, reasons should be given to facilitate evaluation by URCA of the request for confidentiality. URCA may publish or refrain from publishing any document or submission, in its sole discretion.

URCA will review the responses and comments received on this Consultation Document and the Consultation Questions before issuing its Statement of Results and Final Decision, and Final Regulations.

1.4 Intellectual Property

Copyright and all other intellectual property that form any part of a response to this Consultation Document will be assumed to be licensed to URCA for its use during this consultation process.

1.5 Structure of the remainder of this document

The remainder of this Consultation Document is structured as follows:

- Section 2: Sets out the regulatory framework under which URCA is conducting this consultation process.
- Section 3: Sets out - (i) a summary of the key responses to URCA's Request for Information made to licensees; (ii) URCA's observations on the current outage reporting practices of ECS licensees in The Bahamas; (iii) a summary of URCA's findings on international best practices and benchmarks; and (iv) URCA's key takeaways from international best practices and benchmarking.
- Section 4: Provides an overview of the key provisions of the Draft Outage Reporting and Mitigation Regulations for the Electronic Communications Sector in The Bahamas.

- Section 5: Sets out URCA's consideration of the statutory Guidelines for regulation and Government measures in the context of the Draft Outage Reporting and Mitigation Regulations for the Electronic Communications Sector in The Bahamas.
- Section 6: Describes the "Next Steps" in the consultation process.
- Section 7: Sets out URCA's Draft Outage Reporting and Mitigation Regulations for the Electronic Communications Sector in The Bahamas.
- Section 8: Sets out URCA's List of Consultation Questions for response.

2. Regulatory Framework

This section sets out the legal framework that governs URCA's power to conduct this consultation process and to issue the proposed Regulations.

2.1 Relevant provisions of the Communications Act, 2009

Section 4 of the Comms Act provides, *inter alia*, that the electronic communications policy has as one of its main objectives, to further the interests of consumers by enhancing the efficiency of the Bahamian ECS and the productivity of the Bahamian economy and promoting investment and innovation in electronic communications networks and services. Furthering the interests of persons in The Bahamas in relation to the electronic communications sector by promoting affordable access to high quality networks and carriage services in all regions of The Bahamas, maintaining public safety and security, and promoting the availability of a wide range of content services which are of high quality are other main objectives of the electronic communications policy.

Section 5 of the Comms Act requires that all policy measures, decisions, and laws to take effect in the electronic communications sector in The Bahamas shall be made with a view to implementing the electronic communications policy objectives and shall comply with the following guidelines –

- (a) market forces shall be relied upon as much as possible as the means of achieving the electronic communications policy objectives;
- (b) regulatory and other measures shall be introduced (i) where in the view of URCA market forces are unlikely to achieve the electronic communications policy objective within a reasonable time frame; and (ii) having due regard to the costs and implications of those regulatory and other measures on affected parties;
- (c) regulatory and other measures shall be efficient and proportionate to their purpose and introduced in a manner that is transparent, fair, and non-discriminatory; and
- (d) regulatory and other measures that introduce or amend a significant government policy or regulatory measure (including, but not limited to, the sector policy) shall (i) specify the electronic communications policy objective that is advanced by the policy or measure; and (ii) demonstrate compliance with the guidelines set out in paragraphs (a), (b) and (c).

Section 8 of the Comms Act grants URCA the power to issue regulations and other regulatory measures for the purposes of carrying into effect the ECS Policy objectives.

Section 11 of the Comms Act requires URCA to allow persons with sufficient interest a reasonable opportunity to comment on a proposed regulatory measure which, in the opinion of URCA: (i) is of public significance; or (ii) whose rights or interests may be materially adversely affected or prejudiced by the proposed regulatory measure. URCA must also give due consideration to those comments prior to introducing the regulatory measure.

Section 13 of the Comms Act establishes that a regulatory measure is likely to be of public significance if it relates to a regulated sector and can lead to: (i) a major change in the activities carried on by URCA under the Comms Act or any other enactment; (ii) a significant impact on persons carrying on activities in a regulated sector; and/or (iii) significant impact on the general public in The Bahamas or in a part of The Bahamas.

URCA considers that the cumulative effect of the above requires URCA to conduct this consultation process regarding the proposed Regulations and any potential decision URCA issues in relation thereto.

2.2 Relevant Licence Conditions

Condition 13.6 of the IOL mandates licensees to take all appropriate measures to safeguard the security and integrity of its Carriage Services, including, where relevant and necessary, in conjunction with its Network.

Condition 23.2 of the IOL mandates licensees to notify URCA and, to the extent practicable, any affected Subscribers of any event of unplanned interruptions which prevents it from carrying out its obligations under this Licence as soon as reasonably practicable.

Condition 23.3 of the IOL mandates licensees (i) to take all reasonable steps as are required to prevent and resolve unplanned interruptions to the provision of its Carriage Services and operation of its Networks and (ii) to inform URCA on a regular basis about measures taken to deal with the unplanned interruptions.

Condition 27.1.1 of the IOL requires licensees to take all reasonably practicable steps to maintain, to the greatest extent possible:

- (a) the proper and effective functioning of any Public Telephone Network provided by it at all times, and
- (b) in the event of Force Majeure, the availability of the Public Telephone Services provided by it, including uninterrupted access to Emergency Organisations⁸ as part of any Public Telephone Services offered by it.

Condition 27.2.1 of the IOL mandates licensees to ensure that its Public Telephone Network is capable of providing any End-User with access to Emergency Organisations by using the Emergency Call Numbers at no charge and, in the case of a Pay Telephone, without having to use coins or cards.

Condition 27.2.2 of the IOL requires licensees to ensure that any End-User can access Emergency Organisations via a public emergency call service, being an Electronic Communications Service that enables an End-User, at any time and without incurring any charge or requiring any token, to communicate with the police, the ambulance or fire services or the maritime search and rescue services and to notify them of an emergency.

⁸ As defined in Part A of the IOL.

Condition 1.19 of the CLRR requires the licensee to use reasonable endeavours to provide Carriage Services to a standard that could be reasonably expected by Subscribers, having regard to the nature of the services and any advertising or sales information provided by the Licensee.

3. Review of Current Outage Reporting Practices in The Bahamas and International Best Practices

This section sets out the key findings and takeaways from URCA’s review of the written comments received in response to URCA’s request for information to ECS licensees with respect to this project (“URCA’s RFI”) and URCA’s observations of the current unplanned and planned outage reporting practices of ECS licensees. URCA also sets out its findings and key takeaways from its review of unplanned and planned outage and mitigation requirements in other jurisdictions to ensure that its proposals are aligned with international best practice.

More specifically, URCA:

- summarizes the key responses of licensees to URCA’s RFI (section 3.1)
- summarizes URCA’s key observation on the current reporting practices of licensees in The Bahamas (section 3.2).
- reviews the outage reporting and mitigation requirements for electronic communications networks and services in other jurisdictions that align with the proposed Regulations (section 3.3); and
- summarizes URCA’s key takeaways from the benchmarking exercise (section 3.4).

3.1 Summary of Responses to URCA’s RFI

On 24 March 2023, URCA issued the RFI to licensees in The Bahamas. The aim of this RFI was to inform URCA’s understanding of the licensees’ current internal processes and procedures as they relate to disruptions/outages of electronic communications networks and services. In particular, each licensee was asked to -

- Describe how it detects network outages.
- Confirm whether it categorizes network outages based on severity (i.e., minor, major, or critical outages) and if so, to describe how.
- Confirm whether it has implemented internal measures for the restoration of services. If so, to describe such measures.
- Confirm whether it notifies URCA of both planned and unplanned network outages.
- Describe its internal processes (including timelines, means of communication and format) with respect to notifying URCA of both planned and unplanned outages.
- Confirm whether it conducts root cause analyses with respect to unplanned network outages.
- Confirm whether it compensates consumers for both planned and unplanned outages. If so, describe the compensation policy with respect to each.

Having reviewed the submissions received in response to URCA’s RFI, URCA notes the following:

- All respondents detect outages via network monitoring tools and alerts connected to network management systems and devices and other internal resources.
- All respondents categorize outages based on severity and impact.
- All respondents have implemented internal measures for the restoration of services.
- One respondent provides 24 hours' advanced notice to URCA ahead of planned outages.
- One respondent's liaison with URCA receives updates every 2 hours on outages that exceed 2 hours until restoration of services and provides such updates to URCA and customers.
- One respondent notifies URCA of all planned outages. The other only notifies URCA of severe unplanned outages or in circumstances where a significant area of the population is completely without service.
- One respondent submits outage report to URCA after restoration of services.
- All respondents conduct root cause analyses and report with respect to unplanned outages.

3.2 ECS Licensees' Current Reporting Practices


It is important to ensure that the provisions of the proposed Regulations are practicably achievable and address the gaps in the current reporting of planned and unplanned outages to URCA. For this purpose, URCA considered the status quo with respect to the reporting of planned and unplanned outages by licensees to URCA.

Regarding the current reporting practices of ECS licensees in relation to both planned and unplanned outages, URCA makes the following observations:

- Reports concerning both planned and unplanned outages are submitted to URCA inconsistently and as a result URCA only became aware of several recent major disruptions to services via news broadcast, social media reports and complaints from affected consumers.
- The content of planned and unplanned outage reports submitted to URCA does not follow a standard format.
- URCA does not receive timely updates on the status of the restoration of services in connection with unplanned outages.
- URCA does not consistently receive sufficient detail on the cause of unplanned outages in reports submitted to URCA for URCA to understand the root cause and scope of the outage.
- Unplanned outage reports submitted to URCA do not contain root cause analyses and measures implemented by the affected licensee to mitigate recurrence.

3.3 International Benchmarking Exercise


As a part of this benchmarking exercise, URCA studied the relevant measures implemented or proposed by national regulators in Canada, the Cayman Islands, Finland, Jamaica, Lebanon, the United Kingdom, and the United States of America to ensure that URCA's proposals are aligned with international best practice. URCA has set out the findings of its benchmarking exercise in the table below.

Jurisdiction	Summary of Benchmarking Exercise
<p data-bbox="155 354 247 380">Canada</p> 	<p data-bbox="359 354 667 380">Summary of relevant measures</p> <p data-bbox="359 418 2028 578">In February 2023, the Canadian Radio-television and Telecommunications Commission (“CRTC”) commenced a public consultation on the development of a regulatory framework for mandatory notification and reporting of major telecommunications service outages by carriers to the CRTC.⁹ Whilst the said consultation is ongoing, on 8 March 2023, the CRTC issued an interim measure directing all Canadian telecommunications carriers to (a) report major service outages (including outages affecting only 9-1-1 networks) to the CRTC within two hours of when such carrier became aware of the outage; and (b) file a comprehensive report with the CRTC within 14 days following the outage as a means to improve reliability of telecommunications networks.¹⁰</p> <p data-bbox="359 621 2028 711">In March 2023, the Canadian Telecommunications Network Resiliency Working Group published its Resiliency Recommendations for Canadian Telecoms Networks to promote network resiliency.¹¹ This document provides general recommendations on commercial, operational, technical, and physical measures that operators should take to improve the resiliency of their respective networks.</p> <p data-bbox="359 751 575 777">Categories of Outages</p> <p data-bbox="359 816 2028 906">CRTC’s interim measure requires the reporting of major service outages, which includes any outage affecting (i) more than 100,000 subscribers or a material portion of the carrier’s subscribers for more than one hour, (ii) subscribers that are in a geographic area served only by the affected carrier, (iii) critical infrastructure, (iv) major transport facilities, or (v) a 9-1-1 network.</p> <p data-bbox="359 946 835 972">Designated Contact & Means of Communication</p> <p data-bbox="359 1011 2028 1070">At the date of the publication of this Consultation Document, the CRTC has not specified whether carriers in Canada are required to designate a person with responsibility of outage notification to the CRTC or the means by which outages notifications will be made to the CRTC under the interim measure.</p> <p data-bbox="359 1109 457 1135">Reporting</p> <p data-bbox="359 1174 2028 1232">The CRTC’s interim measure requires all Canadian carriers to report major service outages to the CRTC within two hours of when the carrier becomes aware of such an outage. Additionally, all carriers are required to file a comprehensive report on major service outages with the CRTC within 14 days following such outage.</p>


⁹ Available at <https://crtc.gc.ca/eng/archive/2023/2023-39.htm>

¹⁰ See note the reference note above.


¹¹ Available at [https://ised-isde.canada.ca/site/spectrum-management-telecommunications/sites/default/files/attachments/2023/CTNR%20Recommendations%20v1.0%20Final%20\(EN\).pdf](https://ised-isde.canada.ca/site/spectrum-management-telecommunications/sites/default/files/attachments/2023/CTNR%20Recommendations%20v1.0%20Final%20(EN).pdf)

	<p>Measures to mitigate and remedy outages</p> <p>Published recommendations and best practices for service providers to consider for the purposes of promoting network resilience, availability, and reliability.</p> <p>Sanctions</p> <p>The CRTC has not specified whether carriers in Canada may be sanctioned by the CRTC for breaches of the interim measure.</p>
<p>Cayman Islands</p> 	<p>Summary of relevant measures</p> <p>In May 2016, the Cayman Islands telecoms regulator, the Utility Regulation and Competition Office (formerly Information and Communications Technology Authority) (“OfReg”) issued the ICT Outage Reporting Rules mandating licensees to, amongst other things, report outages and disruptions to communications networks and services. These rules were amended in 2019. OfReg conducted a public consultation on further amendments to these Rules for the purposes of making information gathering more robust and reporting of outages clearer by defining and differentiating between “planned” and “unplanned” outages¹².</p> <p>Categories of Outages</p> <p>Required to report outages of at least 15 minutes duration that potentially (i) affect at least 50 subscribers; (ii) special Offices and Facilities (including airports, seaports, emergency services etc.) and (iii) mission critical outages (those critically affecting national security/emergency preparedness operations, the Police, Armed Forces, Fire stations etc.).</p> <p>OfReg is conducting public consultation on proposed amendment to the Outage Reporting Rules that will, amongst other things, define and differentiate planned and unplanned outages.</p> <p>Designated Contact & Means of Communication</p> <p>Licensees are required to authorize a person to submit electronic outage notifications and reports to OfReg. In circumstances where the licensee is unable to submit electronic outage notifications and reports, the licensee is required to contact OfReg by other reasonable means.</p> <p>Reporting</p> <p>Required to submit an electronic Initial Notification to OfReg within 60 minutes of discovering the outage. In the event of an outage lasting more than 4 hours, licensees</p>

¹² Available at <https://www.ofreg.ky/viewPDF/documents/news/2022-05-20-07-10-28-ICT-2022---Outages-Reporting-Rules-Updates.pdf>

	<p>must submit electronically Update Notification to OfReg every 4 hours until resolution. Licensees must notify OfReg of the return to service by submitting electronically a Resolution Notification no later than 60 minutes after the outage has been resolved. Licensees must, not later than 14 days after the Resolution Notification, submit electronically a detailed outage report to OfReg.</p> <p>Sanctions</p> <p>Failure to comply may lead to sanctions by OfReg.</p>
<p>Finland</p> 	<p>Summary of relevant measures</p> <p>In December 2019, the Finnish Transport and Communications Agency (“FTCA”) published Regulation 66 on disturbance in telecommunications services. These regulations require telecommunications operators in Finland to notify the FTCA and users of disturbances and threats to public communications networks and services.¹³</p> <p>Categories of Outages</p> <p>Sets out four ratings of disturbances to telecommunications services based on the severity and ranking from high to low.</p> <p><u>Rating A:</u> The disturbance prevents (i) the operation of a public telephone service of 100,000 or more users (ii) the operation of a telephone service in a continuous geographical area of 60,000 km² or more and the operational disturbance affects 25,000 or more users, (iii) the operation of an internet access service of 200,000 or more users, (iv) the operation of an internet access service in a continuous geographical area of 60,000 km² or more and the operational disturbance affects 25,000 or more users, (v) the operation of an SMS service of 200,000 or more users, (vi) the operation of an e-mail service of 500,000 or more users, or (vii) the operation of 500 or more mobile network base stations in a continuous geographical area.</p> <p><u>Rating B:</u> The disturbance prevents: (i) the operation of a public telephone service of 10,000 or more users, (ii) the operation of a telephone service in a continuous geographical area of 20,000 km² or more, (iii) the operation of an internet access service of 50,000 or more users, (iv) the operation of an internet access service in a continuous geographical area of 20,000 km² or more, (v) the operation of an SMS service of 50,000 or more users, (vi) the operation of an email service of 200,000 or more users, (vii) the operation of another communications service of 200,000 or more users, or (viii) the operation of 100 or more mobile network base stations in a continuous geographical area.</p> <p><u>Rating C:</u> The disturbance prevents: (i) the operation of a public telephone service of 1,000 or more users, (ii) the operation of an internet access service of 1,000 or more users, (iii) the operation of an SMS service of 1,000 or more users, (iv) the operation of an email service of 50,000 or more users, (v) the operation of another communications service of 50,000 or more users, or (vi) the operation of 10 or more mobile network base stations in a continuous geographical area.</p>

¹³ Available at https://www.traficom.fi/sites/default/files/media/regulation/EN_M66A.pdf

	<p>Rating D: The disturbance prevents: the operation of a public telephone service of 1,000 or more users, (ii) the operation of an internet access service of 1,000 or users, (iii) the operation of an SMS service of 1,000 or more users, (iv) the operation of 10 or more wireless base stations providing internet access service, (v) the operation of an email service of 50,000 or more users, (vi) the operation of another communications service of 50,000 or more users, or (vii) the operation of 10 or more mobile network base stations in a continuous geographical area.</p> <p>Designated Contact & Means of Communication</p> <p>Telecommunications operators are required to provide the FTCA with the contact information through which the FTCA may request more information from the telecommunications operator about disturbances. The contact information must also include the contact information for the network or service operations centres of the telecommunications operator.</p> <p>Reporting</p> <p>Telecommunications operators are required to: (i) notify the FTCA of disturbances of severity rating A, B or C that have lasted for a continuous period of at least 30 minutes by a preliminary notification, (ii) provide follow-up notifications to the FTCA on the progress of the corrective measures to address the disturbance until the disturbance has been resolved, and (iii) submit a final report to the FTCA setting out how the disturbance was detected, the original cause of the disturbance, the corrective measures taken and an explanation of measures taken to prevent recurrences.</p> <p>Sanctions</p> <p>Regulation 66 on disturbance in telecommunications services does not specify any sanctions or penalties for non-compliance.</p>
<p>Jamaica</p> 	<p>Summary of relevant measures</p> <p>On 20 June 2022, the Office of Utilities Regulation (“OUR”) published a public consultation document on proposed “Outage Reporting Protocols and Measures to Improve Network Resiliency in Disaster”.¹⁴ The OUR has proposed to establish these protocols to, amongst other things, mandate telecommunications operators in Jamaica to report both planned and unplanned outages to the OUR and end-users. The OUR considers that such reporting will equip it with the necessary data to assess the magnitude of outages, monitor service restoration activities, and identify common recurrent threats to the normal functioning of networks and services.</p> <p>Categories of Outages</p> <p>Sets out three categories of outages, namely (i) critical outages; (ii) major outages and (iii) minor outages.</p>

¹⁴ Available at <https://our.org.jm/document/outage-reporting-protocols-and-measures-to-improve-network-resiliency-in-disasters-consultation-document/>

Critical Outages are those (i) affecting users' ability to access Emergency Services, (ii) affecting Critical or Special Facilities, (iii) affecting the Core Network, (iv) affecting more than 100 telecommunication access nodes or sites, or (v) affecting more than 20% of the Licensee's customer base for the affected service or more than 100k users in different parishes.

Major Outages are those (i) that have an impact on the performance of 10 or more access nodes or sites, or (ii) affect more than 5% of the Licensee's customer base for the affected service or more than 20k users.

Minor Outages are defined as any outages other than Critical or Major Outages.

Designated Contact & Means of Communication

Requirement to designate a contact person responsible for the submission of outage notifications and reports to the OUR. Requirement to provide the OUR with the designated contact person's title and contact information and to notify OUR of any changes to the designated contact person.

Requirement to submit outage notifications and reports to the OUR via e-mail or through any other electronic platform so designated by the OUR. In the case of Critical Outages, the Initial Outage Notification shall be made by telephone to the OUR.

Reporting

Planned Outages

Required to provide two days' advanced notice of any planned outage to the OUR in the form of the unplanned outage notification. The OUR has the discretion to consider any planned outage as unplanned outage where such outage lasts longer than the initial estimate duration provided by the relevant licensee.

Unplanned Outages

Required to submit (i) initial outages notifications within 1 hour of detection of both critical and major outages; (ii) outage notification updates notifications for critical outages lasting more than 1 hour must be submitted to the OUR every hour and for major outages lasting more than two hours outage notification updates must be submitted to the OUR every second hour; (iii) outage resolutions must be submitted to the OUR no later than 1 hour after the restoration of normal function of network and/or services; and (iv) outage reports must be submitted no later than 14 days after submission of outage resolution notification).

Sanctions

Failure to comply may lead to enforcement action.

Lebanon



Summary of relevant measures

In 2009, the Telecommunications Regulatory Authority (“TRA”) published the Technical Quality of Service and Key Performance Indicators Regulation which, amongst other things, all service providers in Lebanon to submit outage reports to the TRA.¹⁵

Categories of Outages

Service providers in Lebanon are required to report four categories of outages to the TRA, namely (i) critical outages, (ii) major outages, (iii) minor outages and (iv) outages affecting emergency services. Critical outages are those affecting the entire network, the core of the network or 30% or more of the traffic. Major outages are those affecting a part of the network and influencing less than 30% of the traffic. Minor outages are those affecting individual sites, and/or components at the edge level of the network that do not interrupt service or performance. Emergency services are defined as the ability to connect in priority, from any service area via any subscriber or public terminal or device to national pre-defined numbers regardless of the subscription validity.

Designated Contact & Means of Communication

Service providers are required to state a contact person in the Network Outage Report to be submitted to the TRA.

Reporting

Critical outages: Service providers are required to notify the TRA immediately of critical outages. Major outages: Service providers are required to report major outages to the TRA within 1 hour. Minor outages: Service providers are required to report minor outages to the TRA within 7 days. Outages affecting Emergency Services: Service providers are required to report such outages immediately.

Sanctions

Failure to comply may lead to the TRA imposing penalties such as amendments to the service provider’s licence, suspension of the service provider’s licence and the imposition of fines.

¹⁵ Available at <http://www.tra.gov.lb/Network-Outage-Report>

United Kingdom



Summary of relevant measures

Section 105K of the United Kingdom’s Communications Act, 2003 (recently amended by the Telecommunications (Security) Act 2021)) requires telecommunications operators in the United Kingdom to, amongst other things, notify the Office of Communications (“Ofcom”) of any security compromise that has a significant effect on the operation of the network or service. Security compromises include, amongst other things, anything that compromises the availability, performance, or functionality of the network or service.¹⁶ In this regard, a security compromise is defined, in relation to a public electronic communications network or a public electronic communications service as ¹⁷ -

“(a) anything that compromises the availability, performance, or functionality of the network or service;

(b) any unauthorised access to, interference with or exploitation of the network or service or anything that enables such access, interference or exploitation;

(c) anything that compromises the confidentiality of signals conveyed by means of the network or service;

(d) anything that causes signals conveyed by means of the network or service to be—

(i) lost;

(ii) unintentionally altered; or

(iii) altered otherwise than by or with the permission of the provider of the network or service;

(e) anything that occurs in connection with the network or service and compromises the confidentiality of any data stored by electronic means;

(f) anything that occurs in connection with the network or service and causes any data stored by electronic means to be —

(i) lost;

(ii) unintentionally altered; or

(iii) altered otherwise than by or with the permission of the person holding the data; or

(g) anything that occurs in connection with the network or service and causes a connected security compromise.”

¹⁶ Available at <https://www.legislation.gov.uk/ukpga/2003/21/section/105B/2011-05-26>

¹⁷ Section 105A(2) of the Communications Act, 2023 available at <https://www.legislation.gov.uk/ukpga/2021/31/crossheading/duties-of-providers-of-public-electronic-communications-networks-and-services/enacted>

In 2017, Ofcom published guidance on security requirements in sections 105A to D of the Communications Act 2003 prior to the amendments made by way of the enactment of the Telecommunications (Security) Act 2021.¹⁸ At the date of this document, Ofcom has published a draft guidance on resilience requirements in section 105A to D of the Communications Act 2003 to promote network, performance and functionality and a draft procedural guidance on the exercise of Ofcom’s functions to ensure compliance with security duties.¹⁹

Categories of Outages

Required to report any security compromise that has a significant effect on the operation of a network or service. When determining the effect of such security compromise the following matters should be considered:

- (a) the length of the period during which the operation of the network or service is or would be affected;
- (b) the number of persons who use the network or service that are or would be affected by the effect on the operation of the network or service;
- (c) the size and location of the geographical area within which persons who use the network or service are or would be affected by the effect on the operation of the network or service; and
- (d) the extent to which activities of persons who use the network or service are or would be affected by the effect on the operation of the network or service.

Designated Contact & Means of Communication

All security compromises reports should be reported to Ofcom by email.

Reporting

Service providers are expected to provide initial notifications of urgent security compromises to Ofcom within 3 hours of the provider becoming aware of them.


Duty to mitigate and remedy outages

Requires service providers to take such measures as are appropriate and proportionate for the purpose of a) identifying risks of outages occurring; b) reducing risks of outages occurring; and c) preparing for the occurrences of outages.

Requires service providers to take such measures as are appropriate and proportionate to remedy an outage as soon as reasonably practicable and to mitigate adverse effects

¹⁸ Available at https://www.ofcom.org.uk/_data/assets/pdf_file/0021/51474/ofcom-guidance.pdf

¹⁹ Available at https://www.ofcom.org.uk/_data/assets/pdf_file/0027/233568/annex-5-draft-s105A-Z-procedural-guidance.pdf

	<p>from outages.</p> <p>Sets out high level guidance to providers of electronic communications networks and public electronic communications services that must be considered in complying with their obligations to mitigate and remedy outages.</p> <p>Ofcom has discretion to conduct assessment as to whether a service provider is failing or has failed to comply with its obligations to mitigate and remedy outages. Service providers are required to cooperate with such assessment.</p> <p>Sanctions</p> <p>Failure to comply with may lead to enforcement action by Ofcom.</p>
<p>United States of America</p> 	<p>Summary of relevant measures</p> <p>In 2004, the Federal Communications Commission (“FCC”) established the Network Outage Reporting System (“NORS”). Under the NORS, qualifying communications providers are required to report network outages that last at least 30 minutes and satisfy other specific thresholds in NORS. In 2017, the FCC published a Notice to communications service providers to implement appropriate measures to prevent major service disruptions.²⁰</p> <p>Categories of Outages</p> <p>There are no categories of outages. However, certain communication providers (including wireline, cable, satellite, wireless, interconnected VoIP, and Signaling System 7 providers) are required to report network outages that last at least 30 minutes and satisfy other specific thresholds to the FCC.</p> <p>Designated Contact & Means of Communication</p> <p>Notification and Initial and Final Communications Outage Reports shall be submitted by a person authorized by the communications provider to submit such reports to the Commission via the in the NORS.</p> <p>Reporting</p> <p>After determining that an outage is reportable, wireline, cable, satellite, wireless and Signaling System 7 providers must submit a NORS notification within 120 minutes with preliminary information. The service provider must submit an initial outage report within three calendar days, followed by a final report no later than 30 days after discovering</p>

²⁰ Available at https://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db0713/DA-17-672A1.pdf

the outage.²¹

Interconnected VoIP providers must submit a NORS notification either: 1) within 240 minutes after discovering an outage that potentially affects a 911 facility or 2) within 24 hours of discovering an outage which affects potentially 900,000 user minutes and results in a complete loss of service or potentially affects any special offices and facilities. They must also file a final report within 30 days of discovering the outage.²²

Covered 911 service providers, or providers that aggregate 911 traffic from an originating service provider and deliver it to a 911 call center must notify the designated official at the 911 call center as soon as possible but no later than 30 minutes after discovering an outage that affects a 911 call center. The covered 911 service provider shall convey all available information as well as a name, telephone number, and email address at which the service provider can be reached for follow-up. The covered 911 service provider must also communicate additional material information to the affected 911 call center as it becomes available, but no later than two hours after the initial contact.²³

Duty to mitigate and remedy outages

In 2017, the FCC published recommendations and best practices for the purposes of encouraging communications service providers to implement appropriate measures to prevent major service disruptions.²⁴

Sanctions

Failure to comply may lead to enforcement action by the FCC.

²¹Available at <https://www.fcc.gov/network-outage-reporting-system-nors>

²² Available at <https://www.fcc.gov/network-outage-reporting-system-nors>

²³ Available at <https://www.fcc.gov/network-outage-reporting-system-nors>

²⁴ Available at https://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db0713/DA-17-672A1.pdf

Supplemental to the above, URCA also reviewed the relevant provisions of Directive (EU) 2018/1972 of the European Parliament and the European Council which established the European Electronic Communications Code (Recast) (“EECC”).²⁵ URCA notes the following key provisions of the EECC:

Paragraph 96 of the Preamble states as follows,

“Providers of public electronic communications networks or publicly available electronic communications services, or of both, should be required to take measures to safeguard the security of their networks and services, respectively, and to prevent or minimise the impact of security incidents. Having regard to the state of the art, those measures should ensure a level of security of networks and services appropriate to the risks posed. Security measures should take into account, as a minimum, all the relevant aspects of the following elements: as regards security of networks and facilities: physical and environmental security, security of supply, access control to networks and integrity of networks; as regards handling of security incidents: handling procedures, security incident detection capability, security incident reporting and communication; as regards business continuity management: service continuity strategy and contingency plans, disaster recovery capabilities; as regards monitoring, auditing and testing: monitoring and logging policies, exercise contingency plans, network and service testing, security assessments and compliance monitoring; and compliance with international standards.”

Paragraph 98 of the Preamble states as follows,

“Competent authorities should ensure that the integrity and availability of public electronic communications networks are maintained. The European Union Agency for Network and Information Security (‘ENISA’) should contribute to an enhanced level of security of electronic communications by, inter alia, providing expertise and advice, and promoting the exchange of best practices. The competent authorities should have the necessary means to perform their duties, including powers to request the information necessary to assess the level of security of networks or services. They should also have the power to request comprehensive and reliable data about actual security incidents that have had a significant impact on the operation of networks or services.”

Furthermore, Article 40(1) mandates EU member states to ensure that providers of public electronic communications networks or of publicly available electronic communications services take appropriate and proportionate technical and organisational measures to appropriately manage the risks posed to the security of networks and services. This includes measures to prevent and minimise the impact of security incidents on users and on other networks and services.

Article 40(2) mandates EU member states to ensure that providers of public electronic communications networks or of publicly available electronic communications services notify without undue delay the competent authority of a security incident that has had a significant impact on the operation of networks or services. In order to determine the significance of the impact of a security incident, where available the

²⁵ Available at <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32018L1972>

following parameters shall, in particular, be taken into account: (a) the number of users affected by the security incident; (b) the duration of the security incident; (c) the geographical spread of the area affected by the security incident; (d) the extent to which the functioning of the network or service is affected; (e) the extent of impact on economic and societal activities.

Article 2(21) defines “security of networks and services” as the ability of electronic communications networks and services to resist, at a given level of confidence, any action that compromises the availability, authenticity, integrity or confidentiality of those networks and services, of stored or transmitted or processed data, or of the related services offered by, or accessible via, those electronic communications networks or services.

Article 2(42) defines “security incident”²⁶ as an event having an actual adverse effect on the security of electronic communications networks or services.

3.4 Key Takeaways from Benchmarking

Based on the information set out above, URCA makes the following observations:

- Outage reporting is a standard feature of regulatory regimes in North America, Europe, Asia, and the Caribbean and has been adopted by regulators such as Ofcom, the FCC and mandated by the EECC.
- Most of the benchmarked countries have established various categories of outages, based on their scope and impact.
- Most of the benchmarked countries require outages to be reported to the regulator in a stage-by-stage process aiming to provide the authority with comprehensive insights on the outage. The manner in which the outage is categorised helps to define the process. The minimum information to be submitted to the relevant authority at every stage is typically defined (i) to keep authorities informed; (ii) to allow authorities to understand and evaluate the severity of an outage; and (iii) to standardise the format of outage reports among licensees.
- Initial notifications require the Licensee’s contact details, date and time of the onset of the outage, its description, and the geographical area and networks affected.
- Outage updates require more details about the outage, an estimation of its duration, as well as a more accurate description of its scope.
- Resolution notifications usually require the time of restoration of the affected network components or services, and details about the corrective actions taken.

²⁶ Security incidents include network outages. Available at European Union Agency for Cybersecurity (ENISA) “Security Supervision under the EECC” January 2020 available at <https://www.enisa.europa.eu/publications/supporting-the-implementation-of-the-european-electronic-communications-code-eecc> at pg. 14

- Some of the benchmarked countries require, in the final outage report, a root-cause analysis and the list of actions taken or to be taken by the Licensee to prevent future similar outages.
- The United Kingdom has imposed a duty on public electronic communications network providers and electronic communications service providers to take such measures as are appropriate and proportionate for the purposes of — (a) identifying the risks of security compromises occurring; (b) reducing the risks of security compromises occurring; and (c) preparing for the occurrence of security compromises and published guidance on best practices in this regard.
- The United States of America, United Kingdom, and Canada have also published guidelines to electronic communications network and service providers on measures to implement to prevent major service disruptions. In this regard the EECC, states that providers of public electronic communications networks or publicly available electronic communications services, or of both, should be required to take measures to safeguard the security of their networks and services, respectively, and to prevent or minimise the impact of security incidents.

4. Overview of the Proposed Outage Reporting and Mitigation Regulations

In this section, URCA provides a high-level overview of the proposed outage reporting requirements and measures to mitigate and resolve outages. In formulating its proposals, URCA has duly considered the principles set out in section 5 of the Comms Act (see Section 5 of this document below) and internationally recognized best practice (see Sections 3.3 and 3.4 of this document above). More specifically, it provides information on URCA's proposals under the following headings:

- Section 4.1 - Scope and Application
- Section 4.2 - Categories of outages
- Section 4.3 - Designation of contact persons
- Section 4.4 - Reportable outages
- Section 4.5 - Reporting formats
- Section 4.6 - Measures to mitigate and resolve outages

4.1 Scope and Application

URCA proposes that the Regulations only apply to those licensees of URCA that have established, maintain, and operate a Public Electronic Communications Network and/or provide Public Electronic Communications Services pursuant to an IOL or a COLRR.²⁷ URCA believes that such licensees should be subject to the proposed Regulations as Public Electronic Communications Networks and Services are critical infrastructure that are key to the functioning of society and the economy and maintaining public safety and security in The Bahamas.

²⁷ Services including but not limited to fixed telephony, fixed broadband, mobile telephony, mobile broadband, satellite broadband, pay TV, and free-to-air TV.

For the avoidance of doubt the Regulations would not apply where a Disaster Emergency has been declared under section 27 of the Disaster Preparedness and Response Act.²⁸ Where a Disaster Emergency has been declared, relevant licensees must comply with their reporting obligations under the Disaster Management Regulations for the Electronic Communications Sector in The Bahamas (ECS 18/2020).²⁹

Consultation Question 1:

Do you agree/disagree with the proposed scope and application of the proposed Regulations? Please give reasons why you disagree.

4.2 Definition of Outages & Categories of Outages

URCA proposes to define the term “Outage” as a degradation in the ability of an end-user to establish and/or maintain a channel of communication as a result of the failure of, or degradation in the performance of, a Licensee’s network or service.³⁰

URCA proposes two (2) different sets of criteria to categorise outages. The first is based on whether the outage is planned or unplanned; while the second classifies outages (both planned and unplanned) based on their severity i.e., critical, or major.

Planned and Unplanned Outages

URCA proposes to define the term “Planned Outage” as an Outage of licensee’s public electronic communications network that are a part of regular operation and maintenance activities, where the licensee (i) knows at least seventy-two (72) hours in advance that such an event will occur and (ii) has notified URCA and all affected customers that the Outage will occur.³¹

URCA proposes to define the term “Unplanned Outage” as an Outage that cannot be considered a planned outage.³²

The proposed Regulations distinguish between planned (i.e., service interruptions or suspensions to service caused by operation and maintenance) and unplanned outages. This distinction is consistent with Condition 23 of the IOL.

The proposed requirement for service provider to provide 48 hours advance written notice to URCA of planned outages is consistent with the approach adopted by the OUR in Jamaica and is reasonable

²⁸ Available at https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2006/2006-0004/DisasterPreparednessandResponseAct_1.pdf

²⁹ Available at https://www.urbahamas.bs/wp-content/uploads/2020/12/Disaster-Management-Regulations-for-the-Electronic-Communications-Sector-in-The-Bahamas_Final-07122020.pdf

³⁰ This proposed definition is consistent with the OUR’s and the FCC’s respective definitions of outage.

³¹ The proposed definition of planned outages is consistent with the OUR’s definition of planned outage.

³² The proposed definition of unplanned outages is consistent with the OUR’s definition unplanned outage.

considering that licensees in The Bahamas noted that they typically provide 24 hours' notice to URCA prior to planned outages.

Considering the foregoing, URCA is of the view that planned outages must be communicated to URCA at least 48 hours in advance.

Critical and Major outages

Benchmarked countries and licensees in The Bahamas as a common practice, utilize various factors to determine the severity of an outage. URCA proposes to adopt this approach.

Bahamian licensees typically categorise unplanned outages in three (3) to four (4) categories, based on the severity and scope of the outage (i.e., the number of customers impacted in a service location and components of network affected). URCA proposes to establish two categories of unplanned outages based on severity and scope of the outage for the purpose of streamlining the reporting process.

Many of the benchmarked countries categorize outages based on users affected³³, two of the benchmarked countries rely on the affected level of the network³⁴ and two of the benchmarked countries categorize outages based on the number of access nodes and sites affected.³⁵ Additionally, many of the benchmarked countries considered any degradation of emergency communications and critical Infrastructure to be reportable outage.³⁶ URCA proposes the adoption of each of the foregoing criteria in the Regulations.

URCA considers that its proposed two categories of reportable unplanned outages (i.e., critical, and major) are sufficient and endeavours to make the reporting process efficient.

Having regard to the foregoing, the archipelagic nature of The Bahamas, and the varying population density across the Islands and Cays of The Bahamas, URCA is of the view that the following proposed criteria are appropriate and proportionate:

- Critical Outages are defined as any outage affecting (a) 5,000 or more of the licensee's customers for the affected service situate on the Island of New Providence; (b) 1,000 or more of the licensee's customers for the affected service situate on the Islands of Grand Bahama, Abaco, Eleuthera, or Exuma; (c) 50 or more of the licensee's customers for the affected service situate on a Family Island; (d) customers that are situate in a geographic area of The Bahamas which is only served by the affected licensee; (e) affecting the licensee' core network; (f) critical infrastructure³⁷; or (g) access to emergency communications services.

³³ Jamaica, Cayman Islands, United Kingdom, Finland, Lebanon

³⁴ Jamaica and Lebanon

³⁵ Jamaica and Finland

³⁶ Jamaica, Cayman Islands, United Kingdom, and Lebanon

³⁷ Proposed definition to include includes airports, seaports, Emergency Organisations, national security/emergency preparedness operations, the Royal Bahamas Defence Force and the Royal Bahamas Police Force, Fire Services and any other assets, systems, and networks that significantly impact the social and/or economic well-being of the nation or affect The Bahamas' ability to provide national security.

- Major Outages are defined as those that (a) affect 1,000 or more of Licensee’s subscribers for the affected service of the Licensee’s customers situate on the Island of New Providence; (b) 500 or more of the licensee’s customers for the affected service situate on the Islands of Grand Bahama, Abaco, Eleuthera, or Exuma; (c) affect 20 or more of the licensee’s subscribers for the affected service situate on all other Family Islands; or (d) have an impact on the performance of 5 or more access nodes or sites within the licensee’s network.

Consultation Question 2:

Do you agree/disagree with the number of outage categories proposed by URCA (i.e., planned, and unplanned outages)? Please give reasons why you disagree.

Consultation Question 3:

Do you agree/disagree with the proposed minimum time to notify URCA of planned outages? Please give reasons why you disagree.

Consultation Question 4:

Do you agree with the proposed categorization criteria and specific thresholds for outages (i.e., critical, and major outages)? Please give reasons why you disagree.

4.3 Designation of Contact Person

Some of the benchmarked countries require the designation of a contact person responsible for reporting outages to the regulator.³⁸ URCA is of the view that designating a contact person will ensure that a dedicated resource within licensees reports outages to URCA, which facilitates the appropriate communication channel between the service provider and URCA with respect to outages. URCA thus proposes to require licensees to designate a contact person within their organization to report outages to URCA.

Consultation Question 5:

Do you agree/disagree with the proposal that licensees designate a contact person to report outages to URCA? Please give reasons why you disagree.

4.4 Reportable Outages

URCA proposes to require licensees to provide 48 hours advanced notice to URCA of all planned outages, which is consistent with URCA’s proposed changes to Consumer Protection Regulations³⁹ and the approach taken by the OUR.

³⁸ Cayman Islands, Jamaica, United Kingdom, and Finland

³⁹ URCA’s is currently conducting public consultation on its proposed changes to the Consumer Protection Regulations ECS 19/2013. The proposed changes are available at <https://www.urbahamas.bs/wp-content/uploads/2023/09/URCA-ECS-Consultation-Revised-2023-Consumer-Protection-Regulations.pdf>.

Regarding unplanned outages, most of the benchmarked countries do not require service providers to report all unplanned outages, as reporting on outages with very little impact may generate a disproportionate reporting burden on service providers. Therefore, URCA proposes that any unplanned outage that does not fall within the critical or major category will not be required to be reported by licensees to URCA.

4.5 Reporting Formats

As demonstrated in the Table above, most national regulators follow a multi-step process when reporting outages. Having regard to the responses of licensees in The Bahamas and international best practices, URCA strongly favors the following four reporting stages:

1. Initial outage notifications must be submitted within two (2) hours of detection of a critical or major unplanned outage. Initial outage notifications must include (i) contact details of the service provider, (ii) date and time of the onset of the outage, (iii) description of the outage, (iv) geographical area(s) affected, (v) network components affected, and (vi) services affected.
2. Outage update notifications must be submitted every hour in the case of critical outages and every two (2) hours in the case of major outages. Outage update notifications must provide licensees' best estimates on the time required to resolve the outage and any further information uncovered on the outage.
3. Outage resolution notifications must be submitted within one (1) hour after the restoration of the normal functioning of the network in the case of critical outages and in the case of major outages, outage resolution notifications must be submitted within two (2) hours of the restoration of the normal functioning of the network. In Outage update notifications licensees must, in addition to the information in the initial outage notifications and outage update notification, provide the actual time of restoration, as well as the corrective measures applied to clear the outage.
4. Outage reports must be submitted to URCA no later than twenty-eight (28) calendar days after the outage resolution notification and must include a root-cause analysis of the outage and a list of preventive actions taken or to be taken by the service provider to avoid the recurrence of similar outages.

Consultation Question 6:

Do you agree/disagree with the four-step reporting process and timeframes proposed by URCA? Please give reason why you disagree.

Consultation Question 7:

Do you agree with the information required at each stage of the reporting process? Please give reasons why you disagree.

Consultation Question 8:

Do you agree/disagree with the proposed forms and templates for outage notifications, outage updates, outage resolutions and outage reports? Please give reasons why you disagree.

Consultation Question 9:

Do you agree with the requirement to conduct root cause analyses with respect to critical and major outages? Please give reasons why you disagree.

4.6 Duty to remedy and mitigate outages and high-level guidance

URCA proposes to adopt the approach taken by United Kingdom by:

- requiring licensees to take such measures as are appropriate and proportionate for the purpose of a) identifying risks of outages occurring; b) reducing risks of outages occurring; and c) preparing for the occurrences of outages; and
- requiring licensees to take such measures as are appropriate and proportionate to remedy an outage as soon as reasonably practicable and to mitigate adverse effects from outages.

URCA proposes to adopt the approach taken by the United Kingdom, Canada, and the United States of America by publishing high-level guidelines on measures that may promote the availability and reliability of electronic communications networks and service. The proposed guidelines will provide a non-exhaustive list of measures that URCA may consider in determining whether an operator has complied with their obligations to mitigate and remedy outages.

URCA considers that such proposed duty to mitigate and remedy and the said proposed high-level guidance to be consistent with and supplement Conditions 13.6, 23.3, and 27.1.1 of the IOL. URCA also considers that such proposed duty will apply to licensees that have established, maintain, and operate a Public Electronic Communications Network (IOL) and provide Public Electronic Communications Services (COLRR).

Consultation Question 10:

Do you agree/disagree with the proposed duty on licensees to take such measures as are appropriate and proportionate for the purpose of a) identifying risks of outages occurring; b) reducing risks of outages occurring; and c) preparing for the occurrences of outages? Please give reasons why you disagree.

Consultation Question 11:

Do you agree/disagree with the proposed high-level guidance setting out a non-exhaustive list of matters that URCA may consider when assessing a licensee compliance with its duty to mitigate and remedy outages? Please give reasons why you disagree.

5. Consideration of the Guidelines for Regulations and Government Measures

URCA is required to introduce regulatory measures which are efficient and proportionate to their purpose and must introduce them in a manner that is transparent, fair, and non-discriminatory. This means that where URCA believes that market forces alone are unlikely to achieve a policy objective within the required timeframe, URCA may introduce regulatory requirements, having due regard to the costs and implications for affected parties. With that stated, URCA is satisfied that its proposals are in line with the principles for good regulation for the following reasons:

- The proposed measures (i.e., Regulations and associated Guidelines) are fit for purpose and reliance on *market forces* alone would not achieve URCA's objectives or alleviate the concerns noted.
- The proposed measures will promote the main *objectives of the ECS Policy* by furthering the interest of persons in all regions of The Bahamas in relation to the ECS.
- The proposed measures are *non-discriminatory*. URCA finds that there is no objectively justifiable reason to limit the application of the proposed measures to one category of licensees. Rather, the proposed measures are applicable to all licensees that have established a Public Electronic Communications Network and provide Public Electronic Communications Services pursuant to an IOL or a COLRR. This means that any potential concern about discriminatory treatment is unfounded and without merit.
- The proposed measures which are informed by internationally recognized best practice are *fair, efficient, and proportionate*, having regard to the objectives of the Consultation Document. Put differently, the proposed measures are appropriate and necessary to achieve the objectives of the Consultation Document.
- The proposed measures are *transparent* as demonstrated by URCA's invitation to licensees and the wider public to provide written comments on its proposals. This is consistent with URCA's statutory duty to consult with interested parties on matters of public significance and to have regard to any comments received.
- As to the *cost and implication* of the proposed measures, URCA has no reason to think that its proposals are likely to impose an unfair regulatory burden on its licensees.

6. Next Steps

URCA will carefully consider all comments and submissions received within the prescribed timeline for responding to this Consultation Document. Subject to section 1.3 of this Consultation Document, all comments and submissions received within the prescribed timeline may be published on the URCA website.

URCA intends to issue a Statement of Results and Final Decision to this Consultation Document within sixty (60) calendar days following the end of the consultation period unless extenuating circumstances dictate otherwise (in which case URCA will duly notify the public). URCA will give full reasons for its decisions.

Upon completion of this consultation process, URCA's Statement of Results and Final Decision and the Final Regulations will be published on URCA's website.

7. Draft Outage Reporting and Mitigation Regulations for the Electronic Communications Sector in The Bahamas

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Part I: Introduction

1. Citation

- 1.1. These Regulations may be cited as the Electronic Communications Sector Outage Reporting and Mitigation Regulations.

2. Scope and Objectives

2.1 In the exercise of the powers conferred upon it by section 8(1)(d) of the Communications Act, 2009, the Utilities Regulation and Competition Authority (“URCA”) hereby issues these Regulations relating to the reporting of outages affecting Public Electronic Communications Networks and Public Electronic Communication Services in The Bahamas.

2.2 The objectives of these Regulations are –

- (a) to ensure that URCA is notified by Licensees of both Planned and Unplanned outages in a timely and standardized manner;
- (b) to ensure that URCA receives necessary information from Licensees to assess the magnitude and frequency of both Planned and Unplanned outages;
- (c) to facilitate URCA’s monitoring of Licensees’ service restoration activities;
- (d) to ensure that URCA receives necessary information from licenses to identify common recurrent issues negatively impacting the functioning of Public Electronic Communications Networks and Services in The Bahamas;
- (e) to ensure that Licensees conduct in-depth analysis of the root causes of each outage;
- (f) to ensure that Licensees take necessary internal measures to mitigate and remedy outages; and
- (g) to provide a non-exhaustive list of measures that URCA may consider in determining whether a licensee has complied with its duty to mitigate and remedy outages.

2.3 These Regulations shall apply to all licensees of URCA that have established, maintain, and operate a Public Electronic Communications Network and/or provide Public Electronic Communications Services pursuant to an Individual Operating Licence (“IOL”) or a Class Operating Licence Requiring Registration (“COLRR”). These Regulations do not apply in circumstances where a Disaster Emergency has been declared under section 27 of the Disaster Preparedness and Response Act, as in such circumstances, the reporting obligations set out in the Disaster Management Regulations for the Electronic Communications Sector in The Bahamas (ECS

18/2020) are applicable.

Part II: Interpretation

3.1 In these Regulations, any words, or expressions to which a meaning has not been assigned in these Regulations will have the meaning so assigned in the Communications Act, 2009 and, unless the context otherwise requires, the following terms shall have the meanings prescribed below –

- (a) “the Act” means the Communications Act, 2009.
- (b) “Authorised Person” means an employee of, or a person authorised by, URCA.
- (c) “Core Network” means the highest level in an electronic communications network’s architecture, which is in charge of connecting remote access nodes, and hosting service and network platforms that are critical for the proper provision of electronic communications services, and whose malfunction will affect a significant share of the users of the network.
- (d) “Critical Infrastructure” includes airports, seaports, Emergency Organisations, national security/emergency preparedness operations, the Royal Bahamas Defence Force and the Royal Bahamas Police Force, Fire Services and any other assets, systems, and networks that significantly impact the social and/or economic well-being of the nation or affect The Bahamas’ ability to provide national security.
- (e) “Emergency Organisations” mean in respect of any locality: (a) the relevant public police, fire, ambulance, and coastguard services for that locality; and (b) any other organisation, as directed from time to time by URCA as providing a vital service relating to the safety of life in emergencies.
- (f) “Emergency Communication Services” means services offering the Licensee’s subscribers the ability to connect in priority, from any service area via any subscriber or public terminal or device, to national pre-defined emergency numbers to communicate any emergency situation, regardless of the status of a customer’s subscription.
- (g) “Family Island” means any of those inhabited Islands and Cays situate within The Commonwealth of The Bahamas save and except for the Islands of New Providence, Grand Bahama, Abaco, Eleuthera and Exuma.
- (h) “Licensee” means any licensee of URCA that has established, maintains, and operates a Public Electronic Communications Network and/or provides Public Electronic Communications Services pursuant to an IOL or a COLRR.
- (i) “Outage” means a degradation in the ability of an end-user to establish and/or maintain a channel of communication as a result of the failure of, or degradation in the performance of a Licensee’s network or service.

- (j) "Planned Outage" means an Outage of licensee's electronic communications network that is a part of regular operation and maintenance activities, where the licensee (i) knows at least seventy-two (72) hours in advance that such an event will occur and (ii) has notified URCA and all affected customers that the Outage will occur.
- (k) "Public Electronic Communications Network" means an electronic communications network provided wholly or mainly for the purpose of making electronic communications services available to members of the public.
- (l) "Public Electronic Communications Service" means an electronic communications carriage service over a public electronic communications network including –
 - i. Fixed broadband services;
 - ii. Fixed telephony services;
 - iii. Mobile broadband services;
 - iv. Mobile telephony services;
 - v. Satellite broadband services; and
 - vi. Pay television services.⁴⁰
- (h) "Unplanned Outage" means an Outage that cannot be considered a planned outage.

Part III: Classification of Outages

4.1 Critical Outages is any Outage affecting –

- (a) 5,000 or more of the Licensee's customers for the affected service situate on the Island of New Providence;
- (b) 1,000 or more of the Licensee's customers for the affected service situate on the Islands of Grand Bahama, Abaco, Eleuthera, or Exuma;
- (c) 50 or more of the Licensee's customers for the affected service situate on a Family Island;
- (d) customers that are situate in a geographic area of The Bahamas which is only served by the affected Licensee;
- (e) affecting the Licensee' core network;
- (f) affecting the performance of 10 or more access nodes and/or sites within a Licensee's network;
- (g) Critical Infrastructure; or
- (h) access to Emergency Communications Services.

⁴⁰ Includes free-of-charge, six-channel, over-the-air television services.

4.2 Major Outages is any Outage that –

- (a) affects 1,000 or more of Licensee’s subscribers for the affected service of the Licensee’s customers situate on the Island of New Providence;
- (b) affects 500 or more of the Licensee’s customers for the affected service situate on the Islands of Grand Bahama, Abaco, Eleuthera, or Exuma;
- (c) affects 20 or more of the Licensee’s customer for the affected service situate on a Family Island; or
- (d) have an impact on the performance of 5 or more access nodes and/or sites within a Licensee’s network.

Part IV: Mandatory notification of outages to URCA

5. Designation of Contact Persons

- 5.1 Licensees shall designate a person responsible for the submission of outage notifications and reports to URCA (“Contact Person”) and shall provide URCA with the person’s title and contact information. The Contact Person shall have the responsibility for the completeness and accuracy of the information contained in the outage notifications and reports.
- 5.2 Licensees shall promptly notify URCA of any changes to the Contact Person’s identity and contact details.
- 5.3 The Contact Person shall certify and sign the Outage Notifications and reports prior to submitting them to URCA and ensure that the information contained therein is complete and accurate to the best of his/her knowledge and belief.
- 5.4 Licensees may designate other specific Contact Persons in each Outage Notification. Should URCA require further information about an Outage, URCA may contact the specific Contact Person for that Outage Notification, if that Contact Person is specified in the last notification about the Outage, and/or the default Contact Person designated by the Licensee.

6. Outage notification process

- 6.1. Licensees shall give URCA forty-eight (48) hours advanced notice of any period of planned outages that is scheduled for routine maintenance or for upgrading of its network.
- 6.2. The Notice of Planned Outage to URCA shall include details of the nature of the maintenance or the upgrading of the network and the estimated duration of the Planned Outage. Where a Planned Outage exceeds the estimated duration for the service and network to be restored set out in the Notice of Planned Outage, such Outage shall be considered an Unplanned Outage. The Licensee shall notify URCA, as soon as practicable after becoming aware that the Planned Outage

is likely to exceed the estimated duration and provide reason(s) for the delay and a new estimated time for restoration of service.

- 6.3. Licensees shall report to URCA any Major or Critical Unplanned Outage.
- 6.4. Within two (2) hours upon detecting a Major or Critical Unplanned Outage, the licensee shall submit an Initial Outage Notification of any such Outage to URCA.
- 6.5. In the event of an Unplanned Critical Outage lasting more than one (1) hour, the Licensee shall submit periodic Outage Update Notifications every hour, until the resolution of the Unplanned Critical Outage. For Unplanned Major Outages, lasting more than two (2) hours, the Licensee shall submit an Outage Update Notification to URCA on the 2nd hour and periodic Outage Update Notifications every two (2) hours thereafter, until the resolution of the Unplanned Major Outage.
- 6.6. Licensees shall notify URCA of the resolution of any Unplanned Critical Outage immediately after the normal functioning of the electronic communication networks and/or services has been restored. Within one (1) hour of said restoration of an Unplanned Critical Outage, the Licensee shall submit an Outage Resolution Notification to URCA. Regarding an Unplanned Major Outage, the Outage Resolution Notification shall be made by the Licensee to URCA no later than two (2) hours after the normal functioning of the communication networks and/or services has been restored.
- 6.7. Licensees shall submit to URCA a detailed Outage Report no later than twenty-one (21) calendar days after the Outage Resolution Notification.

7. Means of communication

- 7.1. Outage Notifications and reports shall be submitted to URCA via e-mail to the contact person designated by URCA to handle such matters or through any other electronic platform so designated by URCA. In circumstances where a Licensee is unable to submit outage notifications, outage update notifications and outage resolution notifications by email or through an electronic platform designated by URCA, the Licensee is required to contact URCA by other reasonable means including by telephone.

8. Content of the outage notifications and reports

- 8.1. Regarding Unplanned Outages, Licensees shall complete and submit The Initial Outage Notification in accordance with the template found Annex A (A.2), and such Initial Outage Notification shall contain the following information:
 - (a) the Licensee's name;
 - (b) the date and time of the Outage;
 - (c) the category of the Outage;
 - (d) the geographical area(s) affected;

- e) the number of the Licensee's customers affected by the Outage if known to the Licensee at the time of the submission of the notification to URCA;
- f) Network components affected;
- g) the electronic communication services affected;
- h) confirmation on whether affected customers were provided 48 hours advance notice of the Planned Outage and if so by which means of communications;
- i) a description of the outage, including any additional relevant details (e.g., how it was detected, and its effect on the affected users or services); and
- j) a description of the reason(s) that caused the outage if known to the Licensee at the time of issuing the notification.

8.2. Regarding Unplanned Outages, Outage Update Notifications shall be submitted by Licensees to URCA in accordance with the template in Annex A (A.3) and shall provide:

- a) any update to the information included in the Initial Outage Notification;
- b) the number of licensee's customers affected by the Outage; and
- c) the estimated time to resolve the Outage.

8.3. Regarding Unplanned Outages, Outage Resolution Notifications shall be submitted by Licensees to URCA in accordance with the template in Annex A (A.4) and shall provide:

- a) all the information included in the Outage Update Notifications;
- b) the actual time of restoration; and
- c) details on the corrective measures applied by the Licensee.

8.4. Regarding Unplanned Outages, Outage Reports shall be submitted by Licensees to URCA in accordance with the template in Annex A (A.5) and shall provide inform URCA of the detailed root causes⁴¹ of the outage, and any mitigation actions taken by the licensee to avoid a future recurrence of the outage or outages of a similar nature (refer to Annex B for Root Cause Analyses Methodologies). The Outage Report shall include:

- a) any update to the information in the Outage Resolution Notification;
- b) a comprehensive report on the course of events (i.e., how the Outage was detected, and which corrective measures were taken by the licensee);

- c) a comprehensive root cause analysis according to the principles and guidelines laid out in Annex C; and
- d) a list of actions taken or to be taken by the Licensee to prevent future similar Outages.

8.5. Planned Outage Notifications shall be submitted by licensees to URCA in accordance with the template in Annex A (A.1), and shall contain the following information:

- a) the Licensee's name;
- b) the date and time of the Planned Outage;
- c) the category of the Outage;
- d) the geographical area(s) to be affected by the Planned Outage;
- e) the number of the Licensee's customers affected by the Planned Outage if known to the Licensee at the time of the submission of the notification to URCA;
- f) the network components affected;
- g) the electronic communications services to be affected by the Planned Outage;
- h) a description of the Planned Outage and the reasons for its scheduling;
- i) an estimate duration of the Planned Outage;
- j) confirmation on whether affected customers were provided 48 hours advance notice of the Planned Outage and if so by which means of communications; and
- k) the contact details of the persons whom URCA may contact for the purpose of requesting additional information, if different from the default Contact Person designated by the licensee.

Part V: Duty to take measures to mitigate and remedy Outages

9.1 A provider of a Public Electronic Communications Network or a Public Electronic Communications service must take such measures as are appropriate and proportionate for the purpose of –

- a) identifying risks of Outages occurring;
- b) reducing risks of Outages occurring; and
- c) preparing for the occurrences of Outages.

9.2 A provider of a Public Electronic Communications Network or a Public Electronic Communications Service must take such measures as are appropriate and proportionate to remedy an outage as soon as reasonably practicable and to mitigate adverse effects from outages.

Part VI: URCA's power to assess compliance with duties to mitigate and remedy Outages

- 10.1 Where URCA has reasonable grounds to suspect that a provider of a Public Electronic Communications Network or a Public Electronic Communications Service is failing or has failed to comply with its obligations under Regulations 9.1 and 9.2 above, URCA may carry out, or arrange for another person to carry out, an assessment of whether a provider of an electronic communications network or an electronic communications service is complying with such obligations.
- 10.2 Annex C sets out high-level guidelines containing a non-exhaustive list of items that URCA may consider in assessing whether a provider of Public Electronic Communications Network or a Public Electronic Communications Service has complied with its obligations to mitigate and remedy outages under Regulations 9.1 and 9.2 above.
- 10.3 Where an assessment under this part is carried out, the provider of an electronic communications network or an electronic communications service concerned must co-operate with the assessment.
- 10.4 For the purposes of conducting assessment under this part, URCA may by notice require a provider a Public Electronic Communications Network or a Public Electronic Communications Service to take any of the following actions –
- (a) carry out specified tests of a specified description in relation to the network or service;
 - (b) make arrangements of a specified description for an Authorised Person to carry out specified tests or tests of a specified description in relation to the network or service;
 - (c) make available for interview a specified number of persons of a specified description who are involved in the provision of the network or service;
 - (d) permit an Authorised Person to enter specified premises;
 - (e) permit an Authorised Person to observe any operation taking place on the premises that relates to the network or service;
 - (f) direct an Authorised Person to view equipment or other material on the premises that is of a specified description;
 - (g) direct an Authorised Person to view documents on the premises that are of a specified description;
 - (h) assist an Authorised Person to view information of a specified description that is capable of being viewed using equipment on the premises;

- (i) comply with a request from an Authorised Person for a copy of the documents to which such person is directed and the information such person is assisted to view;
- (j) permit an Authorised Person to inspect or examine the documents, information, equipment or material to which such person is directed or which such person is assisted to view; and
- (k) provide an Authorised Person with an explanation of such documents, information, equipment or material.

Part VII: Sanctions

11. Sanctions

- 11.1 Failure to comply with any provision of these Regulations by a licensee may result in URCA taking the appropriate enforcement action available under the Act against such licensee.

Part VIII: Periodic review

12. Periodic review

- 12.1 URCA will review these Regulations as necessary to ensure that they remain effective and relevant.

Part IX: Entry into operation

13. Entry into operation

- 13.1 The Regulations shall come into operation on [XX].

Annex A: Outage notification and report templates

A.1 Planned Outage Notification Template

Details of the Licensee

Name of the Licensee:

Name of the Contact Person in case further information is required by URCA:

Telephone:

E-mail address:

Details on Planned Outage

Date and time scheduled for the Outage:

Category of the Outage Critical Major

Geographical area(s) affected:

Number of customers affected:

Network components affected:

Have affected customers been provided 48 hours advance notice of the Planned Outage and if so by which means of communications:

Electronic communications services affected:

Estimated duration of the Planned Outage:

Description of the reason(s) for the Planned Outage:

A.2 Unplanned Outage Notification Template

Details of the Licensee

Name of the Licensee:

Name of the Contact Person in case further information is required by URCA:

Telephone:

E-mail address:

Minimum information for Initial Outage Notification

Date and time of the onset of the Outage:

Category of the Outage Critical Major

Geographical area(s) affected:

Number of customers affected:

Network components affected:

Have affected customers been notified of the Outage and if so by which means of communications:

Electronic communications services affected:

Description of the Outage:

Description of the reason(s) that caused the Outage:

A.3 Outage Update Notification Template

Name of Licensee:

Number of customers affected:

Estimated time to resolve the Outage:

Geographical area(s) affected:

Electronic communications services affected:

Description of the Outage:

Description of the reason(s) that caused the Outage:

A.4 Outage Resolution Notification Template

Name of Licensee:

Actual time of restoration:

Details on corrective measures applied:

A.5 Final Outage Report

Name of Licensee:
Root Cause Analysis:

Annex B: Root Cause Analysis Methodologies

- B.1. A comprehensive and complete Root Cause Analysis (“RCA”) must be provided by Licensees in the final Outage Report.
- B.2. The RCA must evaluate and analyse the details of the factors that have contributed to causing the Outage. Outages are often due to multiple factors hence the RCA must evaluate a number of them including, but not limited to:
- i. the capacity and proper functioning of network components;
 - ii. any installation of the most recent updates or versions of software;
 - iii. the adequacy of existing standard operating procedures or the lack thereof;
 - iv. the presence and proper functioning of backup equipment or infrastructure; and
 - v. any external factors affecting the operation or the network infrastructures.
- B.3. Standard RCA methodologies, such as the ones presented in the remainder of this Annex, may help Licensees conduct a thorough analysis of the factors and situations that contributed to causing the Outage, and identify what measures must be taken to prevent the recurrence of similar Outages in the future.
- B.4. A comprehensive RCA must not stop at the first round of apparent reasons for an Outage, but instead include a deeper analysis to identify every contributing factor, its context and its conditions. The “5-Whys analysis” is an iterative RCA technique that aims to identify the root cause of an Outage by repeatedly analyzing the factors that contributed to a fault, the reasons that made those factors possible and any measure to prevent similar situations in the future. The “five” in the name suggests a minimum number of iterations that is typically required to arrive at a comprehensive map of the root causes of an Outage. The 5-Whys analysis must be carried out by a competent working group with key management personnel from different departments. The RCA team must undertake subsequent iterations over the following steps:
- a) Have a clear picture of the outage (1st *why*) or the cause that contributed to the Outage (subsequent *whys*), and its context.
 - b) Analyze where, when and how the Outage has occurred and try to identify potential causes (*whys*), and any countermeasure that may prevent it from happening again in the future.
 - c) For every identified cause, analyze and ask why this caused the Outage.
- B.5. The “Fault tree analysis” is a top-down technique in which the possible states of a system are analyzed based on the combination of lower-level elements. Its final objective is to identify the most vulnerable part of the system, the core components that ensure its functioning, and the component that caused the maximum number of failures.
- B.6. The “Failure modes and effect analysis” is a more complex representation of the fault tree analysis aiming at identifying all potential failures or problems and ranking them using a risk priority number.

B.7. The “Fishbone diagram” aims at identifying many possible causes for an Outage, and sorting ideas into useful categories. The brainstorming starts by asking “why did the Outage happen?” Factors causing an Outage may be initially classified as follows:

- i. Factors related to malfunctions of specific assets (e.g., the network).
- ii. Factors related to the processes or methods used to manage the network.
- iii. Factors related to manpower or other people playing a role in such processes.
- iv. Factors related to demand (e.g., extraordinary traffic spikes, etc.).
- v. Lack of measures required to anticipate an Outage or the inadequacy of existing measures.
- vi. External factors affecting the operation or the performance of the network (e.g., environmental changes in the provision of critical inputs from third parties, etc.).

For each cause preliminarily identified, additional brainstorming must follow. This process is subsequently repeated to detect deeper levels of causes.

“Scatter box diagrams” may be used to detect any correlation between two sets of numerical data. The scatter box diagram is mainly used as a complementary tool when trying to identify the potential root cause of Outages by means of, for instance, fishbone diagrams.

Annex C: High-level Guidelines to mitigate and remedy Outages

In this Annex, URCA set out high-level guidelines referred to in 10.2 of the Draft Outage Reporting and Mitigation Regulations for the Electronic Communications Sector in The Bahamas (“the Regulations”).

1. Accountability and expertise

1. It is important that persons operating Public Electronic Communications Networks and providing Public Electronic Communications Services (“Licensees”) have clear lines of accountability, up to and including Board or company director level, and sufficient technical capability to ensure that potential risks are identified and appropriately managed.
2. In this regard, Licensees may consider the following questions:
 - a. Who at the Board or company director level is responsible for resilience matters?
 - b. Who is responsible for advising the Board about resilience matters?
 - c. Who is the most senior member of technical staff responsible for pro-actively managing resilience matters?
3. Where URCA conducts an assessment under Part VI of the Regulations or investigates a potential breach of the requirements set out in Part V of the Regulations, URCA may request information and evidence of the relevant internal risk management processes and decision. In this regard, URCA expects to obtain information and evidence that relevant risks are regularly considered and have appropriate owners at all levels. URCA may request specific evidence, such as copies of risk assessments and resilience plans, and their approvals, up to and including Board level.
4. It is important for Licensees to maintain a level of internal expertise, capacity, and appropriate accountability mechanisms, sufficient to provide proper management of their outage risks.
5. It is important for Licensees to conduct internal awareness training that stresses the impact of network failure, the risks of various levels of threatening conditions and the roles components play in the overall architecture. Training should be provided for personnel involved in the direct operation, maintenance, provisioning, security, and support of network components.
6. It is crucial for Licensees to ensure that training courses and other necessary upskilling measures are completed before assigning personnel to perform maintenance activities on network components, especially when new technology is introduced in the network.
7. Where a Licensee has outsourced aspects of its network operations to a third party, responsibility to comply with the Regulations remains with the Licensee. It would be prudent for Licensees to ensure at all times that such third party has the appropriate and requisite technical capacity to carry out the outsourced network operations.

2. Management of risks

1. Licensees may consider taking a risk-based approach to managing their networks and services. This means that Licensees need to consider what outage risks they face, and how best to manage them, given their own circumstances. At an early stage in any compliance assessment or investigation URCA will likely request information and evidence to assess whether the Licensee has conducted appropriate assessment(s) to identify, manage, and address any significant risks to the resiliency of its network. Appropriate risk management would typically consist of both the initial risk assessment and mitigation, along with an ongoing risk management process.
2. It is important for Licensees to establish robust business practices that enable rapid assessment of network issues, along with service continuity plans that support strong communication and responsiveness when adverse events cause critical and major outages.
3. Licensees may consider implementing process flows and procedures for internal teams to follow to restore services for various types of faults.
4. It is prudent for Licensees to periodically conduct audits of their networks and take appropriate measures as needed to address any potential matters that may impact the proper and effective functioning of their respective networks.
5. A risk assessment is only likely to be effective in driving performance if Licensees have clear lines of accountability, up to and including Board level, and sufficient technical capability to ensure that potential risks are identified and properly understood. Licensees' approach to risk management should protect end-users. End-user risk should be considered during risk assessment.

3. Supply chain and outsourcing

1. The outsourcing of network or service design, build, operation, or maintenance has the potential to introduce new resilience risks. Licensees should consider an appropriate risk assessment for any significant outsourcing arrangements of this type. Suitable processes should be in place for the ongoing management of identified risks.
2. Licensees are encouraged to discuss with URCA at an early stage any planned new arrangements that may have significant risks of outages. This early engagement with URCA may minimize the risk of any future compliance concerns.

4. Network monitoring

1. It is important for Licensees to have sufficient oversight of their networks and services to quickly identify significant network and service availability, performance, and functionality incidents. This oversight may involve the monitoring of internal signals such as from equipment fault alarms and network and service key performance indicators (KPIs), and external signals such as customer complaints.

2. Licensees should consider implementing traffic measurements or other mechanisms in major network components to enable the detection of failures where calls are lost but associated equipment continues to operate.

5. Protecting end users – risk assessment and provision of information

1. Licensees may consider taking measures as are appropriate and proportionate for the purpose of preventing adverse effects (on the network or service or otherwise) arising from outages. Therefore, Licensees risk assessments should consider the risk to end users, not just the provider's own business risks.
2. Licensees should attempt to match the delivered network and service availability and performance levels to the customer expectations that have been set.

6. Protecting network interconnections

1. Licensees should consider providing information and assistance to each other in the event that an outage compromises a network interconnection.

7. Emergency Organisations & Critical Infrastructure

1. Licensees should consider, to the extent practicable, the deployment and maintenance of resilient communication networks for Critical Infrastructure and Emergency Organisations. This includes striving for reliable partnerships with Emergency Organisations⁴² and Critical Infrastructure that may be necessary for the delivery of such services.
2. It is important for Licensees to establish redundancies in their networks and services with respect to Critical Infrastructure and Emergency Communications Services such as 911 or 919.

8. Relevant considerations in the event of an Outage

8.1 Adverse effects

- 8.1.1 It is important for Licensees to take such measures as are appropriate and proportionate for the purpose of preventing adverse effects arising from outages. If an outage has an adverse effect on the network or service, it is important for Licensee to take such measures as are appropriate and proportionate for the purpose of remedying or mitigating that adverse effect.

- 8.1.2 When considering the appropriateness and proportionality of measures to be taken by Licensees for the purposes of preventing, remedying, or mitigating adverse effects arising from an Outage, it is important for Licensees to take due account of the needs of their customers.

8.2 Outage notifications and reports

- 8.2.1 In URCA's analysis of any reported Outage, URCA may request information and evidence to determine whether:
- a. The Licensee has taken appropriate and proportionate measures to identify, reduce and prepare for the risk associated with the cause of the Outage; and
 - b. The Licensee has taken appropriate and proportionate measures to prevent, remedy or mitigate any adverse effects in response to the occurrence of the Outage.

9 Resilience guidance in relation to some specific scenarios

The following is a non-exhaustive list of causes of outages that URCA has previously encountered, and is included here to provide some examples of information and evidence URCA may seek to obtain in any investigations or compliance assessments:

- a. Single points of failure
- b. Physical damage (including fire, flood, severe weather, or other natural phenomena)
- c. Loss of power
- d. Hardware failure
- e. Software failure
- f. Human error
- g. Network upgrade and transformation
- h. Third-party action

9.1 Single points of failure

- 9.1.1 In this context, single point of failure means the configuration of a network or service resulting in significant amounts of traffic passing over a single route, a single point of handover, and/or the routing of traffic through a single site (such as a building), thereby

leaving the service vulnerable in the event of a failure adversely affecting that part of the network.

- 9.1.2 Licensees should consider avoiding single points of failure, where it is proportionate to do so. The extent to which avoiding single points of failure is proportionate is likely to vary at different points in the network. Factors that will be relevant to URCA's assessment include:
- a. the volume of traffic conveyed over the single point of failure;
 - b. whether the traffic being conveyed comprises or includes emergency calls;
 - c. the number of customers relying on the single point of failure (so that, for example, it is less likely to be proportionate to deploy protection paths in the access network, whereas protection paths and resilient network functions with fully automatic failover is increasingly expected to be a reasonable step to take in a provider's backhaul and core networks); and
 - d. geographic and physical constraints which limit the Licensee's scope to avoid single points of failure or make it disproportionately expensive.
- 9.1.3 When conducting an assessment of the measures taken by a Licensee, URCA will likely seek information and evidence on whether a Licensee has assessed the single points of failure risks involved in their network design choices.

9.2 Physical damage (fire, flood, and severe weather)

- 9.2.1 Physical damage caused by fire, flooding, and severe weather is an important risk that Licensees need to manage appropriately.
- 9.2.2 Licensees should design physical structures (both indoor and outdoor) to be as resilient as practicable, in the circumstances, to withstand extreme environmental conditions and weather events (e.g., hurricanes, floods, etc.), as well as the loss of commercial utility power supplies.
- 9.2.3 When conducting an assessment of the measures taken by a provider, URCA will closely examine the Licensee's assessment of the physical damage risks involved in their network design choices.

9.3 Loss of power

- 9.3.1 Licensees are expected to manage the risk of power loss appropriately.
- 9.3.2 When conducting an assessment of the measures taken by a provider, URCA will closely examine the Licensee's assessment of the loss of power risks involved in their network

design choices, as well as measures relating to the identification and reduction of these risks.

9.4 Network upgrade and transformation activities

- 9.4.1 Outages caused by failures in asset management, general planning, fault management and testing policy or procedures tend to occur as Licensees engage in network upgrades or transformation activities. Licensees are expected to manage the risks of such activities through implementation of a change followed by lack of adequate testing.
- 9.4.2 When conducting an assessment of the measures taken by a provider, URCA will closely examine and may request information and evidence to determine if failures in asset management, general planning, fault management and testing policy or procedures have contributed to the loss or degradation in availability, performance or functionality of a network or service.

9.5 Third parties

- 9.5.1 URCA is aware that Licensees now make extensive use of third parties to provide infrastructure for, and to design and operate, their networks. It is therefore conceivable that a provider may have less visibility or control over the level of resilience that is put in place, than it would if it kept these activities in-house.
- 9.5.2 Outsourcing to third parties does not excuse Licensees from their obligations under the Regulations. As such, Licensees are expected to have sufficient levels of effective control over third parties in place to ensure they continue to comply with their obligations. Licensees are expected to check continuously and rigorously that actions undertaken on their behalf do not put them in breach of their obligations under the Regulations. This includes Licensees being in a position to demonstrate to URCA that they have proactively engaged with suppliers and sought specific and appropriate assurances in relation to identifying, reducing, and preparing for risks of outages.
- 9.5.3 When conducting an assessment of the measures taken by a provider, URCA will closely examine any contractual arrangements between the provider and relevant third parties, as well as any risk assessment carried out by the provider and any processes in place for the ongoing management of identified risks.

8. List of Consultation Questions

1. Do you agree/disagree with the proposed scope and application of the proposed Regulations? Please give reasons why you disagree.
2. Do you agree/disagree with the number of outage categories proposed by URCA (i.e., planned, and unplanned outages)? Please give reasons why you disagree.
3. Do you agree/disagree with the proposed minimum time to notify URCA of planned outages? Please give reasons why you disagree.
4. Do you agree/disagree with the proposed categorization criteria and specific thresholds for outages (i.e., critical, and major outages)? Please give reasons why you disagree.
5. Do you agree/disagree with the proposal that licensees designate a contact person to report outages to URCA? Please give reasons why you disagree.
6. Do you agree/disagree with the four-step reporting process and timeframes proposed by URCA? Please give reasons why you disagree.
7. Do you agree/disagree with the information required at each stage of the reporting process? Please give reasons why you disagree.
8. Do you agree/disagree with the proposed forms and templates for outage notifications, outage updates, outage resolutions and outage reports? Please give reasons why you disagree.
9. Do you agree/disagree with the requirement to conduct root cause analyses with respect to critical and major outages? Please give reasons why you disagree.
10. Do you agree/disagree with the proposed duty on licensees to take such measures as are appropriate and proportionate for the purpose of a) identifying risks of outages occurring; b) reducing risks of outages occurring; and c) preparing for the occurrences of outages? Please give reasons why you disagree.
11. Do you agree/disagree with the proposed high-level guidance setting out a non-exhaustive list of matters that URCA may consider when assessing a licensee's compliance with its duty to mitigate and remedy outages? Please give reasons why you disagree.
12. Do you have any further comments on the proposed Regulations which have not been previously discussed?