Roadmap to enable 5G deployment in The Bahamas

Statement of Results and Next Steps

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1. Introduction

In this document, the Utilities Regulation and Competition Authority ("URCA") presents its Statement of Results and Next Steps concerning the Consultation Document titled "*Roadmap to Enable 5G Deployment in The Bahamas*" ("Consultation Document")[1]. This document provides a summary of URCA's key takeaways from the consultation process, including responses received from stakeholders and interested persons. It also outlines the actions URCA plans to take to facilitate the deployment of 5G technology in The Bahamas.

URCA published the Consultation Document on 22 August 2024. The objective of the consultation process was to allow URCA to gather input on key regulatory measures and supply-side considerations to enable a market-led provision of 5G services in The Bahamas. To achieve this, the Consultation Document set out, amongst other things, the following:

- URCA's objectives and legal framework for the public consultation;
- The opportunities and challenges of rolling out 5G in The Bahamas;
- Other practical considerations which need to be addressed to facilitate the deployment of 5G in The Bahamas;
- Consultation questions[2] ("Consultation Questions"); and
- URCA's Proposed Next Steps.

The responses to the Consultation Document were initially due on 7 October 2024. Given that this is a matter of national importance, and in response to requests from Licensees, URCA extended the deadline for responses to 6 November 2024 to provide more time for Licensees and other interested parties to submit comments.

URCA received written responses to the Consultation Document from the following persons (collectively "the Respondents"):

(i) The Bahamas Telecommunication Company Limited ("BTC");

(ii) A joint response from Cable Bahamas Limited ("CBL") and Be Aliv Limited ("Aliv") (hereinafter collectively referred to as "the CBL Group");

(iii) The Global Satellite Operators Association ("GSOA");

[1] ECS 73/2024 available at https://urcabahamas.bs/consultations/ecs-73-2024-public-consultation-on-roadmap-to-enable-5g-deployment-in-the-bahamas/

[2] See Consultation Questions contained in ECS 73/2024.

(iv) Ericsson;

(v) A respondent who requested anonymity ("Anonymous Respondent")

URCA thanks the Respondents for their written responses and participation in the consultation process and encourages full participation by all stakeholders going forward. URCA notes that all comments received have been carefully considered by URCA.

In this document, URCA addresses the key comments received from the Respondents. URCA expressly states that the absence of a response to any comment does not imply URCA's agreement, either in whole or in part, with that comment, nor does it suggest that URCA has not considered the comment or considers it immaterial or without merit.

1.1 Legal and Regulatory Framework

This subsection sets out the legal and regulatory framework that governs URCA's power to conduct this consultation process.

Relevant Provisions of the Communications Act, 2009

Section 4 of the Communications Act, 2009 ("Comms Act") provides, *inter alia*, that the electronic communications policy has as one of its main objectives, to further the interest of persons in The Bahamas in relation to the ECS by promoting affordable access to high-quality networks and carriage services in all regions of The Bahamas.

Section 5 of the Comms Act states:

> "*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) –

(i) shall specify the electronic communications policy objective that is advanced by the policy or measure; and

(ii) shall demonstrate compliance with the guidelines set out in paragraphs (a), (b) and (c).

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.

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, therefore, considers that the cumulative effect of the foregoing statutory provisions required URCA to publish the Consultation Document for public consultation to provide an opportunity for all interest persons to submit written comments to URCA on the Consultation Questions and/or any other matter contained in or relevant to the 5G Public Consultation.

1.2 Structure of the Remainder of this Document

The remainder of this document is structured as follows:

- Section 2 provides a summary of the general comments and specific responses to the Consultation Questions received from the Respondents, along with URCA's responses.

- Section 3 sets out URCA's Conclusion and Next Steps.

2. Responses to the Consultation

In this section, URCA summarizes and addresses key comments received from the Respondents, including general comments, responses to the Consultation Questions, and any other relevant matters.

To ensure that this document provides a concise and focused assessment of the Respondents' comments, URCA only addresses those responses that contribute additional material for discussion and/or clarification. Where respondents have raised issues outside the scope of the Consultation Document, URCA has not provided an extensive summary of those comments or the reasons supporting its position.

2.1 General Comments

BTC's General Comments

BTC welcomed the opportunity to respond to the Consultation Document.

BTC outlined its history of mobile service provision in The Bahamas, beginning with 1G voice services in the 1980s and culminating in the nationwide availability of voice, data, and SMS services through its 4G/LTE network.

BTC remarked that it sees 5G as a transformative technology for Bahamian society, similar to the impact of previous mobile advancements. However, BTC emphasized that the high cost of deploying 5G in The Bahamas, given its archipelagic nature and vulnerability to hurricanes, is a significant consideration. Furthermore, support structures and ancillary technologies for 5G deployment must be factored into the cost strategies, especially in Small Island Developing States ("SIDS").

BTC acknowledged the efforts of URCA, in advocating for government incentives to support 5G deployment but notes that the high cost and availability of spectrum remain critical issues. BTC looks forward to further discussions with URCA to address these concerns and ensure the successful rollout of 5G services.

URCA's Response

URCA acknowledges BTC's recognition of 5G as a transformative technology for The Bahamas and understands the challenges associated with deploying 5G in an archipelagic nation, particularly the high costs and the need for appropriate support structures. URCA appreciates BTC's acknowledgment of URCA's efforts to advocate for Government incentives and will continue discussions with BTC and stakeholders to ensure the successful rollout of 5G services in The Bahamas.

The CBL Group's General Comments

The CBL Group also expressed its appreciation for the opportunity to respond to the Consultation Document.

The CBL Group agreed with URCA's analysis of 5G's potential benefits for the economic development of

The Bahamas, highlighting that 5G can provide faster speeds, reduced latency, enhanced communications for the Internet of Things, improved broadband capacity, and support for government initiatives such as ICT hubs, e-government, and broadband access for remote islands and underserved communities.

The CBL Group noted that it supports several of URCA's positions in the Consultation Document, which it believes will help achieve universal 5G availability in The Bahamas. Key points included:

1. **Third Mobile Entrant and 5G Business Case**: While URCA's investigation found a third mobile operator is not currently viable, the CBL Group noted Starlink's potential to become a third mobile operator in The Bahamas by 2026 as the satellite industry evolves. The CBL Group agreed that the 5G business case in The Bahamas is marginal but noted that 5G deployment in The Bahamas will require a stable market structure with two operators to be economically viable.

2. **Public Awareness**: The CBL Group expressed its support for URCA's proposed public awareness campaigns to address health concerns about 5G, emphasizing the need to clarify the low risks of 5G.

3. **Spectrum Availability and Pricing**: The CBL Group agreed with URCA's view that a managed assignment of spectrum is suitable given the current circumstances, on the condition that the Government provides additional spectrum to Aliv without charging a premium.

4. **Investment Incentives**: The CBL Group expressed its support of the Communications License Fee Reduction Scheme as an incentive for 5G investment and acknowledged the Government's decision to eliminate duties on telecommunications equipment, which will enhance the business case for 5G deployment.

The CBL Group raised several concerns regarding the process for enabling 5G deployment in The Bahamas. For conciseness, URCA summarized the Group's concerns below:

1. **Performance Bond and Coverage Obligations**: The CBL Group contended that it would be inappropriate for URCA to require a performance bond for 5G coverage, suggesting that such a bond is more suitable for start-up operators. Additionally, the CBL Group argued that URCA's 5G approach should not include unrealistic coverage requirements.

2. **Slow 5G Growth**: The CBL Group noted that mobile data growth is lagging internationally, questioning the timing and scope of sustainable 5G investments. In this regard, the Group posited that 5G ecosystems will take longer to mature than originally anticipated.

3. **Lack of Comprehensive ICT Strategy**: The CBL Group emphasized the need for a national digital strategy to foster the growth of ICT sectors like AI, IoT, and e-Government, alongside a review of existing legislation to support the new digital age.

4. **Supplier Concerns**: The CBL Group expressed uncertainty and concern about sourcing network equipment from certain suppliers for its 5G rollout due to potential geopolitical pressures to reduce reliance on certain vendors, which could increase costs.

5. **Business Case for 5G**: The CBL Group reiterated that the business case for 5G in The Bahamas is weak, citing limited mobile data growth, market saturation, and a lack of demand for 5G services.

6. **Single Network Option**: The Group questioned the viability of parallel 5G networks in the Family Islands, suggesting that a single 5G network could be more effective. Further, the Group advocated that a single 5G network be built in the Family Islands, with wholesale access for other operators, supported by waivers on 5G-related fees and public funding from the Universal Service Fund.

7. **Fiber Transmission Capacity and Pricing**: The CBL Group highlighted that the Consultation Document does not address the need for BTC to provide sufficient on-island and inter-island fiber transmission capacity to Aliv at cost-based prices, which is a crucial issue for the effective rollout of 5G services in The Bahamas.

8. **Universal Service Framework Review**: CBL calls for a more urgent review of Universal Service in The Bahamas, with a focus on supporting 5G investments in underserved areas like the Family Islands through Universal Service Funding.

9. **Multi-stakeholder collaboration**: CBL stressed the importance of a collaborative approach among stakeholders to overcome the economic challenges to 5G deployment in The Bahamas.

URCA's Response

URCA appreciates the CBL Group's feedback and support for various aspects of the Consultation Document.

URCA notes the CBL Group's concerns, including the viability of a third mobile operator, the business case for 5G, and the need for a national digital strategy. The CBL Group's concerns regarding performance bonds, coverage obligations, and the single network option for the Family Islands are also noted.

Performance bonds are commonly required when there are coverage obligations, such as service availability or network rollout within specific timelines, tied to an awarded license, or other regulatory commitments, which need to be monitored and assessed after the license is granted. The bond is released once these obligations have been successfully fulfilled.

URCA highlights that that performance bonds, coverage obligations and single networks may be considered in URCA's upcoming work in developing the 5G Regulatory Framework, further particulars of which are set out in section 3 of this document.

URCA also recognizes the importance of a collaborative approach to address matters related to fiber transmission capacity, and the overall commercial viability of 5G deployment in The Bahamas. URCA remains committed to further discussions with stakeholders to enable their successful rollout of 5G services in The Bahamas.

The GSOA's General Comments

The GSOA expressed its gratitude for the opportunity to provide feedback to URCA on the Consultation Document. While the GSOA did not directly address the Consultation Question, many of its comments align with the Consultation's core matters. URCA has decided to summarize and address the main points raised by the GSOA in this section as follows.

1. **Opportunities and challenges of rolling out 5G in The Bahamas:** The GSOA agreed with URCA on the benefits of 5G, particularly its ability to meet the growing demand for capacity through advanced technical features. However, GSOA emphasized that 5G is not a standalone terrestrial solution and must integrate with other services, including satellite systems, to provide the most effective connectivity, as highlighted in the 2019 ITU Report M.2460.

2. **Importance of Satellite in the 5G Ecosystem:** The GSOA argued that satellite technology will be crucial in the global 5G ecosystem, particularly in providing 5G services to urban, suburban, and rural areas, as well as supporting Internet of Things (IoT), Machine-to-Machine communications (M2M), media services, and connected transport. The GSOA stressed that integrating satellites into 5G networks early on is essential for a successful 5G ecosystem in The Bahamas as satellite networks offer wide coverage, reliability, and resilience, making them vital for extending 5G services to underserved areas. In particular, GSOA noted that satellite networks can:

    a. provide 5G services to areas beyond the reach of terrestrial networks (e.g., remote, maritime, and aerial locations).
    b. support public safety communications with reliable 5G connectivity.
    c. ensure continuous service for IoT/M2M devices on mobile platforms.
    d. enhance network efficiency through data multicasting.
    e. improve network links with hybrid satellite-terrestrial connections.
    f. deliver broadband services to urban, suburban, and rural areas, playing a similar role as in previous 3G and 4G networks, and advancing into 5G with the development of Very High Throughput Satellite (VHTS) technology.
    g. facilitate broadcasting and government services requiring high reliability and help by distributing content to the network edge, enabling quicker access by user devices for newer 5G applications demanding low latency.

3. **C-band Spectrum Allocation:**

    The GSOA expressed its appreciation of URCA's transparent regulatory process and emphasized that sufficient spectrum for 5G can be found in low and mid bands that are not used for critical services like satellite communications. The GSOA urged URCA to balance the interests of both terrestrial and satellite industries, particularly in the 3700-4200 MHz (C-band), which is essential for Fixed Satellite Services (FSS) in the region. GSOA reiterated that satellite services be integrated into the 5G ecosystem of The Bahamas to ensure continuity of critical services.

    The GSOA argued that the C-band frequencies offer unmatched satellite coverage and robustness against atmospheric conditions, making them a vital asset for satellite services. This combination is essential for various fundamental missions, including aeronautical communications, weather

services, emergency response, disaster recovery, global connectivity, and broadcasting. The importance of the C-band is underscored by the significant number of satellites operating in Latin and Central America, which rely on these frequencies to provide critical telecommunications services.

The GSOA agrees that 400 MHz of C-band spectrum (3300-3700 MHz) is sufficient for the initial deployment of 5G in The Bahamas. This amount of spectrum can adequately support high-quality 5G services for multiple mobile network operators (MNOs), with each operator likely securing at least 40 MHz. The GSOA referenced research from Ofcom, which found that 5G could be delivered with 40 MHz, challenging claims by MNOs that they need more spectrum. GSOA also highlights a paper they developed, arguing that large amounts of C-band spectrum are unnecessary for successful 5G deployment.

GSOA argued that the concerns raised in its White Paper titled "*TEN GOOD REASONS why mobile operators in Africa do not need 100 MHz of contiguous C-band spectrum each*", which discusses why mobile operators in Africa do not need 100 MHz of contiguous C-band spectrum, are also applicable to The Bahamas. The GSOA noted that the paper highlights that the introduction of high-power terrestrial 5G transmissions in the C-band, which is currently used for Fixed Satellite Services (FSS), could cause harmful interference to satellite services. This interference would disrupt satellite earth stations' ability to receive transmissions and create further issues, especially in cases of unlicensed satellite receive-only stations.

To mitigate these risks, GSOA recommended implementing a 30-40 MHz guard band above 3700 MHz to protect existing C-band FSS operations from Out of Band Emissions (OOBE) caused by 5G services. The GSOA also suggested several measures that MNOs can adopt to reduce OOBE, including using lower transmit power, better transmit masks, Multiple-Input Multiple-Output (MIMO) technology, deploying microcells, and forcing user equipment to roam to other frequencies. The GSOA contended that these measures would help ensure the coexistence of FSS and 5G services without significant interference.

The GSOA expressed that the 3300-3700 MHz frequency range is sufficient for national 5G deployments, particularly for urban areas, without impacting existing satellite services above 3700 MHz. Therefore, the GSOA urged URCA to preserve the 3700-4200 MHz range for satellite services and not consider it for IMT systems. The GSOA argued that MNOs do not need 80-100 MHz of C-band spectrum for high-quality 5G services, and that allocating 3300-3700 MHz, along with spectrum from other bands, will be adequate for optimal 5G deployment in The Bahamas.

URCA's Response

URCA acknowledges the GSOA's gratitude and appreciates the insights shared. URCA's responds to the key points raised as follows:

1. **5G Integration with Satellite Networks**: URCA notes the GSOA's advocacy on the importance of integrating satellite technology with 5G, particularly for underserved areas.

2. **C-Band Spectrum**: URCA notes the GSOA's position on the allocation of the 3700-4200 MHz C-band and its concerns regarding interference with satellite services.

3. **Spectrum Requirements for 5G**: URCA acknowledges the GSOA's views on the adequacy of 3300-3700 MHz for 5G deployments in The Bahamas.

URCA is cognizant of the significant advancement of satellite communications technology. As such, URCA notes that there is a potential need to update the regulatory framework governing the ECS to better accommodate satellite technology and related services. In this regard, URCA recently published its Consultation Document on the Regulatory framework for satellite-based electronic communications services in The Bahamas[3] and is currently working on completing this consultative process.

URCA will also continue to monitor global best practices to balance the needs of both terrestrial 5G networks and satellite operations, ensuring effective spectrum management that supports both industries.

Ericsson's General Comments

Ericsson expressed gratitude to URCA for the opportunity to provide comments on its Consultation Document.

URCA's Response

URCA notes Ericsson's gratitude and encourages continued contributions to future consultation documents.

Anonymous Respondent's General Comments

One of the Respondents requested that certain details of their submission in response to the Consultation Document be treated as confidential. In response to this request, URCA has agreed to anonymize the submission while ensuring that the key points and proposals are considered in the consultation process.

The Anonymous Respondent thanked URCA for the opportunity to provide input on advancing 5G technology and broadband infrastructure in The Bahamas. The Anonymous Respondent did not provide direct responses to the Consultation Questions; however, it did provide comments on several key issues that are relevant to 5G deployment in The Bahamas. URCA has decided to address these comments in this section and has summarized the core aspects of the response as follows.

1. **5G Wholesale Model:** The Anonymous Respondent contended that creating an independent, wholesale infrastructure entity (Wholesale Entity) to manage and operate a nationwide 5G network, including a new subsea fiber optic system, to meet The Bahamas' long-term bandwidth needs is necessary. The key benefits of this approach include:

[3] ECS 75/2024 available at Consultation-Document-URCA-satellite-regulatory-framework-06Dec2024.pdf

a. Minimizing resource duplication.
b. Reducing capital costs for telecom operators.
c. Enabling faster deployment and wider coverage, including in underserved areas.

The key components of the Wholesale Model would include:

a. Shared Infrastructure comprising a mix of both new and existing towers, and a mix of terrestrial fiber and wireless backhaul to optimize infrastructure costs.

b. A spectrum Usage and Revenue Collection model which would replace traditional spectrum auctions, to ensure efficient allocation and maximize ongoing government revenue.

c. Long-Term Network Sustainability: the Wholesale Entity would handle ongoing maintenance and upgrades to keep the network competitive.

2. **Demand for 5G Services and Use Cases:** The Anonymous Respondent highlighted that while demand is not yet fully realized across all sectors, there is a clear need for a high-speed, reliable internet, especially in underserved areas. Further, the proposal for a Wholesale Entity model aims to address these connectivity gaps and support broader 5G adoption. This Respondent also acknowledged the potential for sector-specific applications in tourism, logistics, and security, which can be further explored through targeted stakeholder engagement.

3. **Barriers to 5G Deployment**: The Anonymous Respondent identified key challenges to 5G deployment, including high infrastructure costs, limited resources, and the need for a strong regulatory framework. The proposed Wholesale Entity model aims to address these by consolidating infrastructure investments and creating an economically viable model for operators. Additionally, the usage-based spectrum fee model is designed to streamline spectrum allocation and promote efficient utilization.

4. **Quality of Service and Coverage Issues:** The Anonymous Respondent noted that Wholesale Entity strategy leverages both existing and new resources to ensure consistent service quality across The Bahamas, particularly in remote and underserved areas. By optimizing the deployment of fixed and wireless networks through a centralized entity, the Wholesale Entity model aims to improve service delivery, bridge coverage gaps, and enhance customer experience, ensuring equitable access.

5. **Next Steps and Stakeholder Engagement:** The Anonymous Respondent recommended creating dedicated working groups to address sector-specific needs and develop a tailored 5G rollout roadmap. They also expressed their commitment to actively participate in these discussions and collaborating with URCA and other stakeholders to create a comprehensive plan that supports national connectivity goals.

URCA's Response

URCA notes the Anonymous Respondent's feedback and appreciates the insights provided regarding 5G deployment in The Bahamas. URCA's responses to the key points raised are as follows:

1. **Wholesale Model Proposal**: URCA notes the suggestion for creating a Wholesale Entity to manage 5G infrastructure, the object of which is to reduce infrastructure duplication, lower capital costs, and extend 5G coverage, particularly to underserved areas. URCA will carefully assess the feasibility of such a model as it prepares for the upcoming consultation on the review of the Infrastructure Sharing Regulations, as there are competition and network resilience risks associated with such models.

2. **Demand for 5G Services:** URCA acknowledges that the full demand for 5G services in The Bahamas remains uncertain at this time. However, URCA anticipates that 5G will eventually become the standard and, as such, must be deployed in the country. To facilitate this, URCA is committed to creating an enabling environment, including the release of the necessary spectrum for 5G.

3. **Barriers to 5G Deployment**: URCA recognizes the general challenges raised concerning 5G deployment, including infrastructure costs and the need for a robust regulatory framework. URCA will commence its work to implement the 5G regulatory framework for The Bahamas in the first trimester of 2025, further particulars of which are set out in section 3 of this document.

4. **Quality of Service and Coverage**: URCA is aware of the need for high quality of service and coverage, particularly in underserved and uneconomic areas, and will continue to address these issues within the scope of its regulatory remit. URCA believes that the upcoming review of the Universal Service Framework and the Quality of Service Regulations for Electronic Communications Networks and Services in The Bahamas, and the Communications Licence Fee Reduction scheme are key measures that could help address QoS challenges.

5. **Next Steps and Stakeholder Engagement:** URCA acknowledges the recommendation for dedicated working groups and intends to l explore the establishment of such groups to address sector-specific needs. URCA will continue to engage with stakeholders to ensure that the necessary regulatory framework is in place to enable the rollout of 5G services in The Bahamas.

2.2 Specific comments on the Key Features and Benefits of 5G

Consultation Question 1:

Do you have any comments on the key features and benefits of 5G technology? If so, please provide a detailed explanation of these observations, including supporting evidence where available.

Respondents	Comments	URCA's Response
BTC	BTC expressed that it views 5G as a transformative technology designed to enhance mobile broadband by offering faster speeds, greater capacity, and lower latency. These advancements are crucial for improving user experience and boosting the efficiency and versatility of MNOs. However, sufficient spectrum allocation in the low and mid bands are necessary to achieve these benefits.	URCA notes BTC's recognition of 5G as a transformative technology that will enhance mobile broadband, improve user experience, and drive greater efficiency. URCA agrees that sufficient spectrum allocation in the low-bands and mid-bands is essential to realize the full potential of 5G. URCA will reconfirm with Government the release of Premium Spectrum for 5G and the associated terms thereof, taking into account of the consultation responses received.
The CBL Group	The CBL Group largely agreed with the key features and benefits of 5G outlined by URCA, including faster download speeds, lower latency, and increased network capacity, which allows more devices to connect and larger applications to be developed. The CBL Group also commented that 5G also supports network slicing, enabling different speeds and quality of services for various devices on the same network, fostering use cases like smart homes, smart cities, IoT, and automation in sectors such as manufacturing, finance, and healthcare.	URCA notes the CBL Group's insights and largely agrees with the key benefits of 5G, including faster speeds, lower latency, and increased network capacity, which will enable new use cases and enhance connectivity. URCA also recognizes the potential of network slicing, intelligent antennae, and fixed wireless access to provide cost-effective alternatives, particularly in underserved areas such as the Family Islands.

	Additionally, the CBL Group stated that 5G also enables high capacity for fixed devices via intelligent antennae, offering fiber-like speeds through fixed wireless access, which presents a cost-effective alternative to fibre-to-the-home ("FTTH"), particularly in the Family Islands. The CBL Group cautioned URCA against overestimating the benefits of 5G, pointing out that the improvements over 4G may not greatly enhance the consumer experience or justify higher costs. In this connection, the CBL Group stated that forecasts for mobile data growth, like those from Ericsson, have been overly optimistic. The CBL Group noted that regional countries such as Bermuda, the Dominican Republic, Mexico, and others have made significant progress in rolling out 5G, with some like Trinidad and Tobago also working on 5G spectrum availability. As direct competitors to The Bahamas in tourism and other sectors, this puts The Bahamas at risk of becoming less attractive for both tourists and business investment. If 5G rollout is deemed a national priority, the Government may need to provide further support to operators, despite the poor business case for it. CBL argued that non-Standalone ("NSA") 5G is the most likely approach for The Bahamas, with a phased implementation starting in densely populated areas like New Providence and Grand Bahama, and later expanding to more remote Family Islands. NSA 5G will work alongside 4G networks, providing high-speed capacity where needed, while 4G covers lower-speed areas. This approach enables interworking between 4G and 5G networks, offering flexibility to handle capacity in high-demand areas while maintaining support for the majority of mobile users with 4G.	Additionally, URCA notes that the upcoming review of the Universal Service Framework will consider the provision of services in areas that are underserved and/or uneconomical to serve, including the Family Islands The concerns raised by the CBL Group regarding the potential overestimation of 5G's immediate impact on consumers are noted by URCA. URCA will work to adopt a balanced and realistic approach in developing the regulatory framework to facilitate the rollout of 5G in The Bahamas. URCA notes the CBL Group's view on NSA 5G as a practical approach for phased deployment, starting with high-demand areas and expanding to more remote regions. URCA will continue to engage with all stakeholders to develop a 5G regulatory framework that meets the needs of both MNOs and consumers.
GSOA	No direct response.	No comments.
Ericsson	Ericsson stated that 5G is the fastest-adopted technology in mobile	URCA notes Ericsson's insights and data on the rapid adoption

	communications and is set to become the backbone of digital economies, contributing to sustainable growth. As of July 2024, 622 operators across 185 countries were investing in 5G, with 348 operators having launched commercial services. Further, the number of 5G devices has increased by over 123% since 2022, reflecting strong demand for high-performance connectivity. By 2028, 5G is expected to dominate global mobile subscriptions, and by 2029, it will account for 60% of all mobile subscriptions and 75% of mobile data. Ericsson predicted that 5G will represent 52% of mobile subscriptions in Latin America and the Caribbean by 2029. As a result, URCA must prepare for this growth by securing sufficient spectrum across low, mid, and high bands to support 5G infrastructure and innovation.	of 5G and its potential to drive digital economies and sustainable growth. URCA is cognizant of the increasing global demand for high-performance connectivity and agrees that securing sufficient spectrum across low, and mid, and high bands is crucial to support 5G infrastructure and innovation in The Bahamas. However, in light of the current availability of spectrum in The Bahamas and the submissions from the two MNOs operating in the country, URCA will prioritize spectrum allocations in the low- and mid-bands in the first instance. This approach will ensure the immediate support of 5G deployment while considering the evolving needs of the sector. Should the need arise, URCA may consider allocating spectrum in the high bands in the future to further support 5G deployment and ensure the continued growth of mobile services.
The Anonymous Respondent	No direct response.	No comments.

2.3 Specific comments on the Importance of 5G for The Bahamas

Consultation Question 2:

Do you have any other comments on the importance of 5G for The Bahamas? If so, please provide a detailed explanation of these observations, including supporting evidence where available.

Respondents	Comments	URCA's Response

BTC	BTC noted that 5G can drive national economic development, particularly in sectors like transport, healthcare, and tourism. While 5G is best suited for high-density areas, BTC recognizes the unique challenges of the Family Islands and will use technologies such as next-generation fixed wireless access (ngFWA), Fiber to the Home (FTTH), and continued 4G investment to complement 5G rollout. BTC expressed that it expects enterprise solutions to emerge as 5G matures, though many companies currently believe existing technologies like 4G, Wi-Fi, and fiber meet their needs. BTC expressed its commitment to working with URCA to create a favourable environment for 5G deployment in The Bahamas.	URCA concurs with BTC's view of 5G's potential to drive national economic development, particularly in key sectors such as transport, healthcare, and tourism. URCA understands the unique challenges faced in the Family Islands and notes BTC's position that technologies like ngFWA, FTTH, and continued 4G investment will be vital in complementing the 5G rollout. BTC's view regarding the emergence of enterprise solutions is noted and its commitment to create a favourable environment for 5G deployment in The Bahamas.
The CBL Group	The CBL Group agreed with URCA's view on the importance of 5G for The Bahamas. The Group noted that 2023-26 draft Electronic Communications Sector (ECS) policy highlights the sector's role in national development, emphasizing competition, innovation, sustainable practices, and optimal use of state assets like radio spectrum. The CBL Group also noted that the draft ECS policy outlines goals to improve connectivity, ensure affordable access to high-quality networks, and enhance public safety and privacy. The CBL Group concurred with URCA that 5G is crucial for advancing sectors like health, education, and government services, and will support The	URCA acknowledges the CBL Group's position on the importance of 5G in advancing The Bahamas' national development goals, as outlined in the draft ECS Policy 2023-26[4]. URCA concurs with the CBL Group's position that mobile services in general, including 5G technology, will play a pivotal role in improving connectivity, affordability, public safety, and supporting sectors such as health, education, and government services. URCA agrees that 5G aligns with the National Development Plan's ICT growth and infrastructure objectives.

[4] This refers to the Draft ECS Policy that was circulated for public consultation. The final document that was gazette is the ECS Policy 2024-27 available at Electronic Communications Sector (ECS) Policy 2024-2027 – The Utilities Regulation and Competition Authority (URCA).

	Bahamas' goal to become a regional technology hub. Further 5G deployment aligns with the National Development Plan for The Bahamas' objectives for ICT growth and infrastructure development.	
GSOA	No direct response.	No comments.
Ericsson	Ericsson proffered that in the coming years, 5G will drive digital transformation, boosting economic growth, industry productivity, and enhancing mobile broadband services. Moreover, it will enable advanced applications and IoT services through multiple devices, such as cameras, smart glasses, and health monitors. Ericsson expressed its view that 5G Fixed Wireless Access (FWA) will provide a competitive alternative for high-speed broadband in The Bahamas, improving employment, education, health, income opportunities, and entertainment. In this regard, Ericsson predicted that by 2029, 5G FWA connections will reach 330 million, accounting for nearly 85% of FWA connections, with traffic set to grow fivefold between 2023 and 2029.	URCA notes Ericsson's insight and data on 5G's potential to drive digital transformation and enhance mobile broadband services, as well as its role in enabling advanced applications and IoT services. URCA notes Ericsson's views on the value of 5G Fixed Wireless Access (FWA) as a competitive alternative for high-speed broadband in The Bahamas, particularly in improving key sectors like employment, education, health, and entertainment.
The Anonymous Respondent	No direct response.	No comments.

2.4 Specific comments on Challenges in Deploying 5G in The Bahamas

Consultation Question 3:

Do you have any comments on the likely challenges in deploying 5G in The Bahamas set out above? If so, please provide a detailed explanation of these observations, including supporting evidence where available.

Respondents	Comments	URCA's Response
BTC	BTC agreed with URCA's view that 5G represents a significant investment for ECS providers, particularly in light of The Bahamas' geography and population distribution. With 75% of the population in New Providence and 25% on the Family Islands, BTC emphasized the need for substantial low and mid-band spectrum allocations to ensure both capacity and coverage for urban and rural areas. BTC urged URCA to allocate more spectrum to avoid congestion. BTC also expressed concern over the uncertainty of incentive programs, particularly Communication Licence Fee Reduction scheme, and stressed the need for clear and consistent incentives to support 5G deployment. BTC recommended robust and continuing dialog on incentive programs for new technologies and technologies that support 5G deployment such as backhaul, subsea, microwave and terrestrial works required to realize 5G. Additionally, BTC highlighted concerns about the reliability and quality of power in The Bahamas, which affects its ability to invest in and grow its network.	BTC's concerns regarding the need for sufficient low and mid-band spectrum allocations to ensure adequate 5G coverage and capacity across both urban and rural areas are noted. As covered below in response to Question 4, URCA confirms it will focus on the release Premium spectrum for 5G in low and mid bands. URCA recognizes the importance of clear and consistent incentives to support 5G deployment, including incentives for essential infrastructure such as backhaul, subsea, and microwave works. Indeed, URCA notes that the Communications Licence Fee Reduction Scheme and the Government's stated removal of duty on telecommunications equipment are incentives that MNOs can leverage to support 5G deployment. Based on its preliminary discussions with Government (and as stated in the consultation document), URCA does not anticipate that 5G spectrum fees will be set to maximize revenues or to reflect the likely economic value, but mostly in relation to recovering any costs of the spectrum award process. URCA acknowledges BTC's request for additional financial incentives but clarifies that the creation of further incentive

		schemes falls outside its regulatory remit. Regarding power reliability, URCA is aware of the critical role of reliable power supply on network investment and growth. URCA encourages BTC to submit further details regarding the power outages, along with supporting evidence, to enable URCA to fully understand the power-related challenges BTC is experiencing. In the absence of such detailed information, URCA is unable to assess the issue effectively or take appropriate action to address and resolve the matter.
The CBL Group	The CBL Group stated that various factors impact the viability of 5G rollout in The Bahamas. While Aliv has access to CBL's submarine cable capacity in some areas, it relies on BTC for capacity to connect the Family Islands. CBL highlighted the need for additional submarine cable capacity to handle increased 5G traffic. The CBL Group remarked that BTC's high pricing for submarine cable capacity and unprotected backhaul services create challenges for 5G investments. In particular, the CBL Group expressed concern over of outages and disruption to customers and noted that additional resilience is required in BTC's submarine network. As such, the Group advocated for the use of redundant dark fibre as a more reliable solution and requested URCA to investigate BTC's pricing and revise the infrastructure sharing regulations to ensure access to dark fibre at cost-based prices.	URCA notes the concerns raised by the CBL Group regarding challenges related to submarine cable capacity and backhaul services, including pricing and reliability issues associated with BTC's submarine network. URCA will seek to engage with the CBL Group and BTC to better understand these challenges affecting submarine cable capacity and backhaul.
GSOA	No direct response.	No comments.

Ericsson	Ericsson commented that the main challenges to 5G implementation in The Bahamas include low population density across a large archipelago, uncertainty about consumer willingness to pay for enhanced services, insufficient power infrastructure on some islands, and high spectrum fees. To address these challenges, Ericsson recommended incentives for MNOs to invest in 5G infrastructure. Potential incentives include reducing 5G spectrum license fees, lowering taxes on telecom infrastructure imports, and reducing taxes on smartphones to stimulate demand, particularly among low-income populations. These measures could improve access to education, boost enterprise productivity, create jobs, and stimulate economic growth.	URCA notes the challenges highlighted by Ericsson, including low population density, consumer willingness to pay, power infrastructure limitations, and high spectrum fees. While URCA does not have the mandate to directly implement certain incentives, it recognizes the importance of these factors in 5G deployment. Further, as stated in the context BTC's response to Question 3 above, URCA does not anticipate the 5G spectrum fees to be set to maximize revenues or to reflect the likely economic value, but mostly in relation to recovering any costs of the spectrum award process.
The Anonymous Respondent	No direct response.	No comments.

2.5 Specific comments on URCA's assessment that low-band and mid-band spectrum is sufficient for initial 5G deployment

Consultation Question 4:

Do you agree with URCA's assessment that low-band and mid-band spectrum is sufficient for an initial deployment of 5G? If not, please provide a detailed explanation why not and the issues/observations, including supporting evidence where available. Do you see any need of high-band spectrum in the next few years

in the Bahamas? If so, for what types of use case?

Respondents	Comments	URCA's Response
BTC	BTC proffered that currently available low-band spectrum in The Bahamas is insufficient to support two operators within the same band due to bandwidth requirements. Assigning each band exclusively to one operator would result in an unfair spectrum distribution. BTC highlighted that certain spectrum bands may have compatibility challenges due to interference issues, and noted that some bands, such as Band 71 are less developed or less commonly used compared to others in the 5G network Additionally, BTC stated that there are potential deployment challenges for mid-band spectrum near U.S. military bases and airports. Furthermore, an error is noted in the Consultation Document, where AWS-4 (Band 66) is incorrectly listed as usable spectrum.	URCA has carefully considered BTC's concerns regarding the insufficiency of low-band spectrum being available in The Bahamas, the interference issues between certain Bands, and the underutilization of Band 71. Regarding the use of mid-band spectrum near sensitive areas, such as airports and military bases, URCA will consider imposing strict technical requirements based on best international practice, such as towers or antennas, near airports, military bases, and other critical infrastructure to prevent potential interference with operations in these areas. URCA advises BTC that the 600 MHz band (Band 71) is widely used in countries such as the USA and Canada for 5G deployments. As a result, MNOs can source equipment to operate in this band. Additionally, devices from major manufacturers such as Apple, Samsung, and others typically support a wide range of frequencies, including the 600 MHz band. However, URCA recognizes that while this band has been widely adopted in other regions, in The Bahamas must consider local spectrum availability and potential coordination with other regional and international spectrum allocations. URCA will continue to evaluate the most effective spectrum distribution to ensure that it meets both global standards and local needs, supporting efficient 5G deployment across the country.

The CBL Group	The CBL Group agreed that low-band and mid-band spectrum is sufficient for an initial deployment of 5G. High-band spectrum, particularly above 4 GHz is less relevant in The Bahamas in the short to medium term.	URCA notes the CBL Group's position.
GSOA	No direct response.	No comments.
Ericsson	Ericsson recommended that URCA develop a long-term 5G spectrum roadmap using low, mid, and high spectrum bands, harmonized at the global or regional level, to enable economies of scale, roaming, and cross-border coordination. Moreover, the release of these spectrum bands should be done under favorable conditions to encourage infrastructure investments and service innovation. For the initial 5G deployments in The Bahamas, Ericsson specifically proffered that the following spectrum bands should be considered: 700 MHz (3GPP n12, n14, n28), 3300-3800 MHz (3GPP n77/n78), 26/28 GHz (3GPP n257, n258, n261), 2.5 GHz (3GPP n7/n38), and 600 MHz (3GPP n71), which is gaining traction in the Americas region.	URCA notes Ericsson's recommendation for a long-term 5G spectrum roadmap and notes that Ericsson agrees with URCA's assessment that on low-band and mid-band spectrum should prioritized as a first step. Based on the comments received by MNOs operating in country, it is unlikely that URCA will prioritize the release of high band spectrum in the 26/28 GHz band at this time. However, any decisions regarding prioritization and allocation of particular spectrum bands will be subject to further analysis, consultation, and regulatory processes to balance the needs of all stakeholders and the broader objectives of 5G development in The Bahamas. Further details on URCA's approach is set out in section 3 of this document.
The Anonymous Respondent	No direct response.	No comments.

2.6 Specific comments on Spectrum Preferences and Refarming

Consultation Question 5:

Do you have any preference for a specific low-band spectrum band and/or mid-band spectrum band to be assigned to you for the initial deployment of 5G and for a carrier bandwidth? If so, please provide a detailed explanation of your preference(s) and the issues/observations, including supporting

evidence where available.

Do you have any preference for a specific carrier bandwidth within the low-band spectrum band and/or mid-band spectrum band to be assigned to you for the initial deployment of 5G? If so, please provide a detailed explanation of your preference(s) and the issues/observations, including supporting evidence where available.

Do you agree with the release of mid-band spectrum in band 77/78 for the initial deployment of 5G? If not, please provide a detailed explanation why not and the issues/observations, including supporting evidence where available.

Do you see merits in refarming spectrum in band 77/78 to freeing up more of those bands for 5G? If not, please provide a detailed explanation why not and the issues/observations, including supporting evidence where available.

Respondents	Comments	URCA's Response
BTC	BTC recommended that certain mid-band spectrum bands be prioritized for initial use, with a preference for specific frequency ranges and configurations that will not be disclosed due to their commercial sensitivity. BTC emphasized the importance of prioritizing mid-band spectrum deployment to support 5G objectives. While certain spectrum bands have already been partially allocated to various service providers, BTC highlighted the need for equitable, collaborative, and transparent discussions regarding the distribution of these bands. BTC acknowledged that spectrum refarming could help optimize 5G deployment, particularly by reallocating certain spectrum currently used for other purposes in New Providence. This would provide operators with more flexibility in assigning contiguous 5G spectrum blocks. However, BTC noted the need for more details on the refarming process before providing further	URCA has taken note of BTC's suggestions for prioritizing mid-band spectrum to support 5G deployment. URCA recognizes the significance of these spectrum bands for facilitating efficient 5G rollout and will consider these recommendations in its ongoing efforts to ensure effective spectrum allocation. However, as stated in response to Ericsson's comments on question 4 above, any decisions regarding prioritization and allocation will be subject to further analysis, consultation, and regulatory processes to balance the needs of all stakeholders and the broader objectives of 5G development in The Bahamas. URCA acknowledges BTC's recognition of the potential benefits of refarming certain spectrum currently used for other purposes in New Providence for 5G deployment. At this time, URCA does not plan to initiate a refarming exercise, as there is

	input. In this regard, BTC emphasized that any refarming exercise should be equitable, collaborative, and transparent, and expressed its commitment to engaging in discussions with URCA on the matter.	sufficient spectrum available to support 5G deployment initially. However, URCA reserves the right to revisit this position if circumstances change.
The CBL Group	The CBL Group expressed interest in mid-band spectrum for the initial rollout of 5G, contingent upon the resolution of the challenges that it identified.	URCA notes the CBL Group's interest in mid-band spectrum for its initial rollout of 5G in The Bahamas.
GSOA	GSOA urged URCA to preserve the 3700-4200 MHz range for satellite services and not consider it for IMT systems.	URCA will continue to balance the needs of all stakeholders, including MNOs and satellite operators in accordance with the Electronic Communications Sector Policy 2024-27 ("ECS Policy 2024-27")[5] and international obligations.
Ericsson	Ericsson repeated its recommendation that URCA develop a long-term 5G spectrum roadmap, covering low, mid, and high-frequency bands, harmonized globally or regionally to enable economies of scale, roaming, and border coordination. For low-bands, Ericsson suggested the 600 MHz and 700 MHz bands (3GPP n71, n28) for cost-effective 4G and 5G coverage, particularly in suburban and rural areas. They also recommend considering the 700 MHz band (3GPP n14) for 5G deployment, following the US band plan. For mid-bands, Ericsson advocated for the release of the 3300-3700 MHz (3GPP n78), AWS (3GPP n66), and 2300-2400 MHz (3GPP n40) bands, with a focus on the 3300-3700 MHz band, which is widely used for 5G globally. Ericsson also proposed considering the 6 GHz band (6425-7125 MHz) for 5G in the medium to long term, as it could meet future spectrum capacity needs. For high-bands, Ericsson recommended the 26 GHz band (3GPP n258) to	As noted above, URCA will consider the 600 MHz and 3300-3700 MHz bands, along with other bands, for 5G deployment. URCA will also assess Ericsson's suggestions regarding the 6 GHz band in light of the relevant circumstances in The Bahamas. Ultimately, URCA will likely develop its position on the use of the 6 GHz band in alignment with the ECS Policy 2024-2027 and international harmonization efforts. Regarding the 26 GHz, URCA relies on its comments set out above in this document on the use of this spectrum.

[5] Available at https://urcabahamas.bs/publications/electronic-communications-sector-policy-2024-2027/

	support high-speed connectivity, particularly for fixed wireless access (FWA) services, which could help extend gigabit connectivity to rural communities in The Bahamas. Ericsson noted that low spectrum fees for the mmWave band should be implemented to encourage its adoption, as seen in other countries.	
The Anonymous Respondent	No direct response.	No comments.

2.7 Specific comments on Technical Considerations for 5G deployment

Consultation Question 6:

Do you have any comments on the technical considerations that need to be taken into account when determining the relevant spectrum blocks to be made available for 5G in The Bahamas and limitations of its usage? If so, please provide a detailed explanation of these issues/observations, including supporting evidence where available.

Respondents	Comments	URCA's Response
BTC	BTC relied on the information provided in its response to Consultation Question 5.	URCA acknowledges BTC's reliance on its response to Consultation 5, to which URCA has already provided a reply.
The CBL Group	The CBL Group noted that it had no further comments on this matter.	URCA notes that the CBL Group has no further comments.
GSOA	No direct response.	No comments.
Ericsson	For initial 5G deployments by MNOs, Ericsson recommended licensing spectrum below 3GHz in blocks of 2x5 MHz (FDD) / 1x10 MHz (TDD), spectrum in the 3.3-3.8 GHz band (TDD) in blocks of 100 MHz, and spectrum in the 26 GHz band (TDD) in blocks of 200 MHz. These allocations should support various 5G use cases. Further, regulations should allow for the aggregation or disaggregation of blocks to achieve the desired spectrum license sizes.	URCA notes Ericsson's recommendation regarding initial 5G spectrum allocations. URCA will consider the proposed block sizes for spectrum in the 3.3-3.7 GHz band as part of its planning for any 5G spectrum release. Additionally, URCA notes the importance of flexibility in

		spectrum aggregation and disaggregation to accommodate various 5G use cases. URCA will continue to evaluate the optimal allocation approach to meet the needs of MNOs and ensure effective 5G deployment in The Bahamas**.**
The Anonymous Respondent	No direct response.	No comments.

2.8 Specific comments on URCA's Proposed Spectrum Award Procedure

Consultation Question 7:

Do you have any comments on the proposed spectrum award procedure for 5G spectrum? If so, please provide a detailed explanation of these observations, including supporting evidence where available.

Respondents	Comments	URCA's Response
BTC	BTC acknowledged that URCA's primary goal is the efficient deployment of 5G in The Bahamas based on the Government's objectives. BTC noted that Government does not seek to maximise revenue from 5G spectrum but rather aims to recover costs and ensure improved service quality across The Bahamas. BTC expressed that while it understands the rationale behind these objectives, further clarification on costs and commitments is needed before BTC can offer additional comments. BTC also noted that URCA proposed a managed spectrum assignment process rather than an auction and is open to the potential benefits but requires more	BTC's understanding of the Government's 5G objectives and its request for further clarification on costs, commitments, and timelines is noted. URCA will provide additional details on the managed spectrum assignment process and notes BTC's planned 5G deployment in the second half of 2025. URCA expects to begin work on this in the first trimester of 2025.

	details to comment further. BTC emphasized the importance of clear timelines for the process to align with its tentative 5G deployment plans starting in the second half of 2025.	
The CBL Group	The CBL Group agreed with URCA that an auction is not suitable for allocating 5G spectrum in The Bahamas, as the Government's goal is to provide reliable, fast internet, not maximize revenue. The CBL Group expressed that a managed assignment process with specific rollout requirements is seen as a better approach in the context of the local market. In this regard, CBL highlighted that an auction with only two bidders could be challenging and might raise concerns about collusion. CBL noted that, in 2012, URCA issued a 4G spectrum license to BTC in the 700 MHz band, with conditions for network rollout to the Family Islands. This approach could serve as a model for the managed assignment process URCA envisions. However, the CBL Group cautioned that the business case for 5G becomes more challenging as the coverage requirements, including rollout speed and population coverage, increase. CBL recommended that URCA avoid setting concrete 5G coverage targets, as the rollout will likely be incremental with NSA 5G using interworking with 4G networks. This approach would allow operators to flexibly adapt to evolving local demand and network loads, with similar performance levels for most use cases between 4G and 5G.	URCA acknowledges the CBL Group's support for a managed spectrum assignment process over an auction for 5G spectrum in the context of The Bahamas. URCA has taken note of the CBL Group's suggestion to use the 2012 4G spectrum license award to BTC as a potential reference model for designing the upcoming 5G spectrum award process. A key next step for URCA is the design of the 5G spectrum award, during which URCA will take into account the relevant feedback received from stakeholders during this consultation process. URCA notes the CBL Group's recommendation to avoid setting coverage targets in order to provide MNOs with greater flexibility. When determining whether to impose minimum coverage obligations or other measures, URCA will carefully consider both consumer needs and the necessary supply-side factors to create a regulatory environment that supports 5G deployment. Additionally, in keeping with its technology-neutral approach, URCA will allow MNOs the flexibility to select the most suitable technology to meet any obligations imposed.
GSOA	No direct response.	No comments.
Ericsson	Ericsson recommend that URCA considers the positions of MNOs with respect to the best mechanism to award spectrum.	Ericsson's position is noted.
The Anonymous	No direct response.	No comments.

Respondent		

2.9 Specific comments on Non-Price Considerations for the 5G spectrum award and licenses

Consultation Question 8:

Do you have any comments on the price and non-price considerations for the 5G spectrum award and licenses set out above? If so, please provide a detailed explanation of these observations, including supporting evidence where available.

Respondents	Comments	URCA's Response
BTC	BTC agreed with URCA's stance on non-price terms, such as license duration and national scope of 5G deployment. However, BTC expressed concern over overly prescriptive obligations, including coverage and performance standards for 5G. BTC urged URCA to reconsider these requirements, suggesting that further incentives for providers would be more effective. BTC advocated for the regulatory focus to be on fostering 5G success through fair access to sufficient spectrum, while maintaining a balanced pricing model that avoids hindering service quality and rollout. BTC noted that it supports the Government's prioritization of enhanced mobile broadband over revenue maximization.	URCA notes BTC's agreement with URCA's preliminary views on the possible non-price terms in the 5G spectrum licences. While URCA understands BTC's concerns regarding overly prescriptive obligations within the 5G spectrum licences, it will balance the need for coverage and performance standards with the needs of consumers and the ECS Policy 2024-27. URCA reiterates that MNOs will retain flexibility to choose the most appropriate technology to meet any coverage obligations in alignment with URCA's technology neutrality approach.
The CBL Group	The CBL Group concurred with URCA on the 15-year license duration, deeming it adequate for planning and efficient spectrum use. However, the CBL Group noted that it believes that it is premature to decide whether 5G spectrum licenses should be issued on a national basis, particularly regarding the Family Islands.	URCA notes the CBL Group's support for the 15-year license duration. URCA will consider exploring the potential for a shared 5G infrastructure where it is technically and economically feasible to do so, balancing the need for infrastructure-based

	The CBL Group opposed issuing spectrum for two competing 5G networks, as it would be inefficient and delay rollout. Instead, the CBL Group suggested considering a single shared 5G infrastructure for these areas. Regarding coverage obligations, the CBL Group suggested focusing on population rather than geographic coverage and recommended setting reasonable timelines based on feasibility assessments. The CBL Group also stated that it believes that it is too early to establish minimum network performance targets due to varying technical solutions and 5G's hybrid nature.	competition in mobile services and efficient rollout of 5G across The Bahamas. Regarding potential 5G related coverage obligations, URCA reiterates that it will balance the needs of MNOs and those of consumers in alignment with the ECS Policy 2024-27. URCA acknowledges CBL's position that it may be premature to set minimum network performance targets at this stage and will take this into account when determining whether to include minimum network performance targets within the 5G spectrum licenses.
GSOA	No direct response.	No comments.
Ericsson	Ericsson stated that spectrum licenses should be granted for 20 years or longer, with a presumption of renewal, to enhance business predictability and investment returns. Ericsson also suggested licensing spectrum on a national level, ensuring it is technology-neutral and service-agnostic. Additionally, Ericsson advocated for reducing spectrum fees, as high fees can negatively impact infrastructure investment and service affordability, particularly in developing countries. Lower fees would incentivize timely network investments and support the adoption of fast and reliable 5G connectivity.	Ericsson's recommendation for spectrum licenses to be granted for 20 years or longer, with a presumption of renewal, to support investment predictability is noted. However, URCA advises that any spectrum assigned will be part of the individual spectrum licenses issued to the MNOs currently operating in The Bahamas. URCA will consider national-level licensing and regional licensing in 5G spectrum assignment. Additionally, URCA notes that it has adopted technology neutrality, and this approach will be applicable to any 5G spectrum assignment. Regarding spectrum fees, URCA recognizes the potential impact of high fees on infrastructure investment and affordability of 5G services and reiterates that URCA does not anticipate the 5G spectrum fees to be set to maximize revenues or to reflect the likely economic value, but mostly in relation to the opportunity

		cost of the spectrum.
The Anonymous Respondent	No direct response.	No comments.

2.10 Specific comments on Non-Spectrum related implementation considerations

Consultation Question 9:

Do you have any comments on these non-spectrum related implementation considerations? If so, please provide a detailed explanation of these observations, including supporting evidence where available.

Respondents	Comments	URCA's Response
BTC	BTC advocated that a more balanced approach is needed regarding the responsibility for ensuring a stable power supply, as power providers in The Bahamas are also regulated by URCA. While backup power for minor disruptions is expected, BTC argued that frequent or prolonged outages and poor power quality are beyond its control. Additionally, BTC emphasized the importance of promoting both active and passive network sharing, referencing regional examples like the TIGO and Telefonica sharing agreement in Colombia.	URCA notes that BTC repeated its concerns regarding the stability of the power supply and refers to its response on this issue set out earlier in this document. Regarding the promotion of active and passive network sharing, URCA notes BTC's position and will consider this as a part of its upcoming review of the Infrastructure Sharing Regulations.

The CBL Group	The CBL Group stated that Aliv conducted a commercial analysis for 5G network deployment in The Bahamas, evaluating demand for MiFi devices, 5G smartphones, and data consumption. The key findings of this analysis include: • Limited revenue potential as customers expect existing or lower prices for improved speeds. Providers of content and applications (such as Netflix or Facebook) are better placed to gain any additional revenues than the operators. • High mobile penetration in The Bahamas, limiting new customer growth. • Fixed wireless access in remote islands could divert revenue from CBL's broadband customers. • Long-term revenue potential from 5G applications like IoT and autonomous cars is uncertain and unlikely to materialize soon. • On New Providence and Grand Bahama, fiber rollout by BTC and CBL will compete with mobile broadband. • On the Family Islands, 5G is the only viable broadband solution due to the high costs of fiber and low population density, but the business case remains unprofitable due to high coverage and backhaul costs. The CBL Group advocated for a faster approval process for sites with minimal environmental impact and limited sharing potential and exempting smaller “lamppost" type 5G sites (under 10m tall) from detailed approval requirements, stating that these measures could accelerate 5G rollout. The CBL Group stated that the Consultation Document did not address the key issue of whether a single 5G network should be developed on the Family Islands, with BTC and CBL sharing the network's capacity. The CBL Group acknowledged that network sharing can reduce network resiliency but	URCA acknowledges CBL Group’s analysis of 5G deployment in The Bahamas, including the challenges related to revenue potential, high mobile penetration, and the business case for 5G on the Family Islands. URCA has taken into account the CBL Group’s recommendation for faster site approvals and position on potential network sharing on the Family Islands. Regarding networking sharing, URCA refers to its earlier responses on this issue. Additionally, URCA notes the CBL Group’s concerns about access to reliable power supply. In this regard, URCA encourages the CBL Group to submit further details regarding the power outages, along with supporting evidence, to enable URCA to fully understand the power-related challenges the CBL Group is experiencing. In the absence of such detailed information, URCA is unable to assess the issue effectively or take appropriate action to address and resolve the matter. URCA notes the CBL Group’s support of and willingness to participate in future awareness campaigns to address unsubstantiated public concerns about 5G health and environmental impacts. The CBL Group's comments on the potential for private 5G networks and that discussion on spectrum requirements for such network will be necessary when third parties seek to implement such networks are noted. URCA concurs with the CBL Group's assessment regarding the

	suggested that a single 5G network in the Family Islands could improve the business case. The Group noted an example of this would be allowing CBL to roll out 5G in specific areas and provide access to BTC under agreed terms. URCA would oversee the arrangement to address concerns like pricing and discrimination. This approach would also impact spectrum allocation and rollout requirements, including the ability for operators to trade spectrum and adjust coverage obligations based on national roaming arrangements. The CBL Group urged URCA to carefully consider the regulatory principles for a potential shared 5G network in the Family Islands, as this approach may be crucial for successful 5G deployment. Reference was made to examples of single 5G networks in countries like Brunei Darussalam and Malaysia as models for such an arrangement. The CBL Group acknowledged the obligations in the Individual Operating Licence regarding the provision of backup power. However, the CBL Group highlighted that there are ongoing issues with frequent power outages from the main Bahamas Power and Light (BPL) grid in its coverage areas. These outages disproportionately impact mobile operators. The CBL Group noted that while backup power systems are standard for short-term disruptions, they are insufficient for frequent outages caused by underinvestment in grid. As such, the CBL Group urged URCA and the Government to engage with electricity suppliers to ensure the grid can support the additional demands of 5G and prevent future outages. The CBL Group recognized the potential for private 5G networks, particularly in logistics hubs like ports, but expressed that demand in The Bahamas is	validity of the ICNIRP guidelines on RF exposure and agrees that exposure levels should remain within these guidelines to prevent adverse health effects. URCA may consider implementing regulatory measures in this regard.

	currently limited. When third parties seek to implement such networks, further discussions on network operation models and spectrum requirements will be necessary. CBL agreed with URCA's assessment that the introduction of 5G technology does not alter the characteristics of existing radio frequencies, and that the ICNIRP guidelines on RF exposure remain valid. The CBL Group does not expect any adverse health effects from 5G as long as exposure levels stay below these guidelines. The CBL Group acknowledged that there are public concerns about the health impacts of 5G, which are not backed by scientific evidence. Therefore, the CBL Group expressed its support for public awareness campaigns to address these concerns and stated its willingness to collaborate with URCA and the Ministry of Health to plan these initiatives. CBL also welcomed URCA's efforts to provide more transparency on Electromagnetic Field (EMF) measurements and is open to further discussions on developing EMF regulations. CBL concurred with URCA's provisional conclusion that there are no inherent environmental concerns with deploying 5G in The Bahamas. The CBL Group argued that 5G is a more efficient technology for meeting the growing data demands compared to 4G, which would reduce environmental impacts if it replaced 4G. However, CBL noted that misinformation may cause public concern and recommended addressing environmental issues in the public awareness campaigns aimed at tackling health concerns related to 5G.	
GSOA	No direct response.	No comments.
Ericsson	Ericsson proffered that providing incentives for MNOs to invest in 5G infrastructure, which would boost economic activity, improve education access, and create jobs in The Bahamas. Ericsson reiterated its suggested incentives such as reducing 5G spectrum license fees, lowering taxes on	URCA notes Ericsson's suggestions regarding incentives to encourage 5G infrastructure investment, including reducing spectrum license fees, lowering taxes on telecommunications infrastructure imports, and cutting taxes on smartphones.

	telecommunications infrastructure imports, and cutting taxes on smartphones to increase 5G demand among low-income populations. Ericsson referenced several countries, including Brazil, Chile, Colombia, Korea, Japan, the US, and France, that have used similar incentives, including spectrum price discounts and deferred payments, to encourage 5G network investments, particularly in rural and economically non-profitable areas. More specifically, • **Brazil (2021)**: Operators can discount up to 94% of spectrum license payments in exchange for infrastructure investment, with the option for annual payments over 20 years to ease financial burden. • **Chile**: Uses the "beauty contest" model in spectrum auctions, prioritizing coverage expansion and social benefits over tax collection. • **Colombia (2019)**: Allowed operators to use up to 60% of their 700 MHz spectrum license payment for rural coverage investments. • **Korea (2018)**: Offered 5G spectrum in the 28 GHz band at a price five times lower than the 3.5 GHz band to encourage investment. • **Japan (2019)**: Allocated 5G spectrum in the 28 GHz band without charging spectrum licenses to promote infrastructure development. • **USA (2018)**: Assigned 5G spectrum in the 28 GHz band with a fee equivalent to 1% of prior 4G spectrum auction fees. • **France (2018)**: Renewed LTE licenses at no cost in exchange for operators expanding 4G networks in rural areas until 2024. Ericsson noted that the global demand for private 4G/5G mobile networks is growing due to their benefits, including enhanced data protection, reliability, security, automation, low latency, and increased productivity. Many companies are upgrading their legacy networks (e.g., TETRA, P25, GSM-R) to meet critical broadband demands.	URCA acknowledges the potential benefits of such incentives, as demonstrated by international examples, and reiterates that the Communications Licence Fee Reduction Scheme and the Government's stated removal of duty on telecommunications equipment are incentives that MNOs can leverage to support 5G deployment. URCA has considered Ericsson's comments on the growing demand for private 4G/5G networks and their potential benefits, including enhanced data protection, security, and productivity across various sectors in The Bahamas. URCA notes the two forms of private networks, as defined by 3GPP: Standalone NPN and Public Network Integrated NPN. While noting the international uptake of private networks, URCA notes that no demand for private 5G networks in The Bahamas was expressed during this consultation process. Consequently, URCA does not believe that it may be necessary for URCA to prioritize setting aside spectrum for private 5G use at this time. However, URCA will likely explore this option as part of long-term strategic planning, particularly in sectors that may experience growth in demand for private networks, such as logistics, tourism, or utilities. URCA will also monitor trends in the global market and re-assess the need for private network spectrum in the future, ensuring that any decision aligns with The Bahamas' National Spectrum Plan and the ECS Policy 2024-27 and does not undermine public network quality.

	Ericsson stated that the 3rd Generation Partnership Project (3GPP) defines private networks (Non-Public Networks, NPN) in two forms: • Standalone NPN (SNPN); and • Public Network Integrated NPN (PNI-NPN). Ericsson commented that, as of July 2024, there are 1,489 private mobile network customers in 80 countries, with 51.6% using 4G/LTE and 47% using 5G. The Bahamas could benefit from private 5G networks in sectors like tourism, logistics, airports, universities, utilities, and manufacturing, improving security, productivity, and efficiency. Referencing research conducted by the Global mobile Suppliers Association (GSA), Ericsson remarked that private 5G networks commonly use spectrum bands such as 3700-4200 MHz, 2570-2620 MHz, and 450 MHz. In the USA, the CBRS band is used for private 5G deployments, though this requires an expensive and complex central database for spectrum management. Further, the Global System for Mobile Communications Association (GSMA) studies highlight that 5G is key for enterprise digitalization, offering solutions through mobile operators' shared infrastructure or private networks. However, Ericsson cautioned that spectrum set-aside for private networks should not reduce public spectrum to avoid harming public network quality. Ericsson recommended that The Bahamas adopt the EMF limits outlined in the ICNIRP 2020 Guidelines, which are based on scientific research and endorsed by the World Health Organization (WHO). These guidelines, with wide safety margins, are designed to protect both the general population and workers from exposure to EMFs emitted by radio frequencies in the range of	URCA acknowledges Ericsson's recommendation to adopt the ICNIRP 2020 Guidelines for EMF limits, which are endorsed by the WHO. URCA supports following these guidelines to ensure public health protection while enabling the safe deployment of 4G and 5G networks in The Bahamas. URCA will consider the development of regulatory measures in this regard in 2025.

	100 kHz to 300 GHz. They cover all radio technologies, including 2G, 3G, 4G, and 5G. By following these ICNIRP 2020 Guidelines, Ericsson noted that The Bahamas can safely deploy 4G and 5G networks, ensuring the protection of public health while enabling the development of advanced telecommunications services to benefit both consumers and industries.	
The Anonymous Respondent	No direct response.	No comments.

3. Conclusion and Next Steps

URCA extends its sincere gratitude to each of the Respondents for their valuable submissions during this consultation process. The information obtained from these submissions has played and will continue to play a crucial role in shaping the strategic direction of enabling 5G deployment in The Bahamas and in informing URCA's regulatory decisions. URCA encourages continued participation in future consultations, as it will help URCA better understand the needs and concerns of all stakeholders, ensuring that its decisions remain informed and inclusive.

Based on the submissions from the Respondents, URCA, along with the Respondents, recognizes the significant potential of 5G to contribute to The Bahamas' economic development and digital transformation. In light of this, URCA confirms its intention to release Premium Spectrum for 5G in low and mid bands in 2025. The details of this award process and the associated spectrum licence terms will be determined before the end of the third trimester of 2025. Recognizing the interest expressed by several stakeholders in advancing network sharing, URCA also confirms its plan to review the Infrastructure Sharing Regulations in 2025 and to consider the merits of a single network solution.

URCA and the Respondents acknowledge the importance of balancing technological innovation with affordability and accessibility, ensuring that all Bahamians can benefit from the advancements 5G technology offers.

URCA believes that successful 5G deployment in The Bahamas requires effective collaboration among a wide range of stakeholders, including MNOs, the Government, consumers and URCA. URCA emphasizes the critical role that each of these stakeholders plays in ensuring the rollout of 5G technology is well-planned, efficient, and beneficial for all parties involved. Continuous engagement and cooperation are key to addressing challenges and maximizing the potential of 5G.

URCA emphasizes the importance of making sustainable infrastructure investments, particularly in underserved regions and uneconomic to serve regions such as the Family Islands. These investments will be crucial in bridging existing connectivity gaps and ensuring that all areas of The Bahamas benefit from high quality electronic communications networks.

URCA will conduct periodic monitoring and evaluation of its strategies for the deployment of 5G and other advanced electronic communications technology, ensuring that the approach remains adaptable to evolving technological, economic, and regulatory environments. URCA believes that this will allow for adjustments to be made as necessary to address emerging challenges, seize new opportunities, and ensure alignment with the ECS Policy 2024-2027.

Establishing the 5G Regulatory Framework

Having carefully considered the responses to the Consultation Document as outlined in this Statement of Results and Next Steps, URCA aims to begin work on establishing the regulatory framework to facilitate the deployment of 5G in The Bahamas in the first trimester of 2025, subject to further public consultations. URCA will take the following actions, which will be informed by the input received during the consultation

process.

1. **Confirmation of the spectrum bands which will be made available to support the initial deployment of 5G.**

   URCA will aim to confirm the low-band and mid-band spectrum bands for 5G deployment before the end of the third trimester of 2025, with its preliminary focus including Bands 41, 66, 2, 71, and 78. This process will involve meetings with the Government and other relevant stakeholders.

   Based on the Respondents' submission and the availability of sufficient spectrum to facilitate the deployment of 5G, URCA will refrain from exploring the possibility of refarming Bands 77 and 78 at this time. However, this decision is subject to change if circumstances arise that are necessary to advance the main objectives of the Electronic Communications Policy and the ECS Policy 2024-2027. Should such circumstances occur, URCA will reconsider the potential for refarming in a manner that aligns with the broader goals of efficient 5G deployment and the public interest.

   URCA has decided not to prioritize setting aside spectrum for private 5G networks due to apparent current limited demand. However, URCA will monitor global trends and sector growth, and reassess the need for private 5G spectrum in the future. Any decision will align with the National Spectrum Plan and ECS Policy 2024-27, ensuring public network quality is not compromised.

2. **Design of the 5G spectrum award process**

   Once the previous step is completed and taking the results from it into account, URCA will develop a managed spectrum assignment process for allocating 5G spectrum bands. As these bands are designated as Premium Spectrum under the National Spectrum Plan, the process is expected to involve the following steps:

   - Developing draft proposals for pricing, non-pricing terms, and award design.
   - Presenting these proposals to the Government for review and approval.

3. **Infrastructure and Network Sharing**

   URCA intends to review and amend the Infrastructure Sharing Regulations in 2025. This review may involve updating existing provisions related to network sharing arrangements, including active and passive sharing, as well as single wholesale networks. Additionally, URCA will clarify its approach to evaluating any network sharing or single network proposals submitted by licensees. Such arrangements will be assessed by URCA with a focus on, among other considerations, addressing network resiliency and competition concerns.

4. **Public Awareness Campaigns**

   URCA plans to work with relevant stakeholders to conduct public education initiatives to address health and environmental concerns related to 5G technology. These initiatives will focus on providing accurate, science-based information to the public, particularly concerning the safety of electromagnetic field (EMF) exposure.

5. EMF Regulatory Measures

URCA may consider developing regulations and/or other regulatory measures to ensure compliance with the ICNIRP EMF guidelines. This may include setting clear exposure limits, regular monitoring and reporting requirements, and third-party testing to verify compliance.

6. Formation of the Working Group

URCA may establish and chair a working group that will facilitate discussions on technological advancements, such as 5G, ensuring a coordinated approach to regulatory frameworks, stakeholder engagement, and the integration of emerging technologies in The Bahamas.