



aliv

Roadmap to Enable 5G Deployment in The Bahamas

Response to ECS73/2024 Public Consultation Submitted to
The Utilities Regulation & Competition Authority (URCA)

6 November 2024

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1. Executive Summary

Cable Bahamas Ltd. (“CBL”) and Be Aliv Limited (“Aliv”) welcome this opportunity to comment on URCA’s public consultation on the “Roadmap to Enable 5G Deployment in The Bahamas” (ECS 73/2024). CBL agrees with URCA’s analysis of the potential benefits of 5G for the economic development of The Bahamas. 5G has the potential to provide:

- Much faster speeds and shorter delays/latency than the current 4G networks, as well as enabling communications within the Internet of Things
- Fibre quality communications to the islands where direct fibre connections to homes and businesses are not economic
- Capacity to cope with the large increases in the demand for mobile broadband that may develop in the future
- An ability to cater for the expectations of tourists and businesses used to 5G services in their home countries
- A technology that should play a central role in the implementation of the Government’s policy for the Electronic Communications Sector, especially the ICT hubs in The Bahamas, e-government initiatives, on-line education, the provision of broadband to remote islands and disadvantaged communities, and the building of resilient communications networks.

CBL believes that URCA has set out a number of positive positions in the consultation document that will bring the goal of universal availability of 5G services closer. This includes:

- URCA’s recent investigation into the possible further liberalization of the cellular mobile market in The Bahamas which concluded that a third mobile network operator would not be commercially viable at this point¹. CBL, however, has taken note of the grant of a licence by URCA to Starlink (a subsidiary of SpaceX) to provide satellite broadband services throughout the Commonwealth in 2022, and given the rapidly evolving satellite industry towards the provision of cellular mobile satellite services by 2026, CBL is closely monitoring the trajectory towards Starlink being in position to be the third mobile operator in the country by said date. As has been pointed out in previous submissions on this subject², the business case for 5G rollout in The Bahamas is marginal at best and a number of conditions will need to be met to make 5G investments economically viable. Maintaining a market structure of two operators in a small market like The Bahamas is one of those conditions.
- CBL welcomes URCA’s proposed public awareness campaigns to allay concerns over allegations about the effects of radio waves from mobile towers through a programme of public information and consultation. Like URCA, CBL expects there to be no adverse health effects from 5G, provided that 5G RF exposure levels remain below the ICNIRP guidelines for members of the public. However, the perception of the public of any health effects may be driven by miss-information and the promotion of further awareness of both the benefits and low risks of 5G are essential to the success of the program.
- CBL notes URCA’s approach to spectrum availability and has provided more detailed responses to the questions posed by URCA in the consultation document. CBL agrees with URCA that a managed assignment process is the most appropriate in the current circumstances, provided that The Government agrees to issue additional spectrum to Aliv without charging any premium over and above the usual spectrum fees.

¹ Electronic communications sector policy, consultation document ECS 11/2023, paragraph 50.

² For example, CBL’s Paper titled “Potential for 5G in The Bahamas” submitted to URCA in February 2021.

- CBL appreciates that the need to incentivize investment in telecommunications infrastructure has been recognized by the Government, as evidenced by the establishment of its Communications License Fee Reduction Scheme in 2022/23³. As noted by URCA, this scheme allows Licensees to apply to URCA for a reduction in their annual Communications License Fee (of 0.75% relevant turnover in the first year, increasing to 1.5% for every year thereafter), if they invest at least B\$100,000 in emerging technologies and services or in underserved areas. As 5G constitutes a new service and emerging technology in The Bahamas, investments in 5G infrastructure would also qualify for this reduction, encouraging MNOs to accelerate the deployment of advanced network capabilities.
- CBL notes that the Government has stated that duties on telecommunications equipment have been eliminated and again this will drive improvements in the business case for 5G.

CBL also has a number of concerns in relation to the process to enable 5G deployment in The Bahamas, as follows:

- CBL is of the view that it would be wholly inappropriate for URCA to require a performance bond to secure coverage of 5G capacity. The Aliv performance bond alluded to by URCA was in support of the build-out of a new national network by a start-up operator to ensure ubiquitous access to mobile services was provided in a reasonable timeframe. This is not a relevant or appropriate approach to the rollout of Non-Standalone 5G, which will be the version of 5G appropriate to The Bahamas for many years. Non-standalone 5G would provide an incremental layer to 4G in areas and pockets of high demand, not blanket coverage across the nation. Hence it will be difficult to identify whether the terms of any performance bond have been met. Moreover, URCA also did not require a performance bond for 4G spectrum when the spectrum was awarded. It is unclear to us why URCA sees the 5G process being different from 4G, and hence why a performance bond is necessary for 5G. Requiring a performance bond, particularly one tied to unrealistic coverage requirements, would likely result in delays in 5G being made available.
- CBL notes that in earlier discussions with URCA, timelines were discussed to make 5G available based on ambitious timeframes. For example, indicative timeframes set out by CBL for the rollout of 5G networks set out in 2021 would have seen the technology and related services made available across the Family Islands by 2023. The reality of 5G rollout has fallen significantly behind these original ambition levels and the operators have invested large amounts of money in terrestrial fibre networks. Moreover, experience in other countries shows that it is difficult to increase revenues from customers for 5G services. This shows that the rollout of 5G is facing significant economic barriers that may only be addressed through far more extensive cooperation between stakeholders than has been the case to date.
- The current consultation does not address the requirement for BTC to make available sufficient on-island and inter-island (sub-marine) fibre transmission capacity to Aliv at cost-based prices.
- CBL notes that URCA is planning a review of Universal Service in its current Annual Plan and that this review has been planned for, and not executed, since at least 2021. The review needs to be given much higher priority, more focus, and a much shorter timescale. Universal Service Funding may be made available to provide 5G MiFi⁴ access to residential and business premises on selected Family Islands, offering further support for a 5G business case in these areas.

³ <http://www.govnet.bs/wps/wcm/connect/d476d4fd-ddde-4b5f-b2ea-e1ba33ae1f73/COMMUNICATIONS%2BACT%2B%28AMENDMENT%2BTO%2BSCHEDULE%2B3%29%2BORDER%2B2%2022.pdf?MOD=AJPERES>

⁴ MiFi provides connectivity to fixed devices over mobile spectrum (also known as fixed wireless access)

- CBL is of the view that, in order to create a suitable climate for 5G investments, a much more comprehensive digital national strategy needs to be developed and implemented to allow for the growth of new ICT market segments, for example in Artificial Intelligence (AI), Internet of Things (IoT) and e-Government initiatives. This may need to include a review of existing legislation to ensure the ICT ecosystem in the Bahamas is supported by a fit-for-purpose legal framework for this new digital age. The ‘build it and they will come’ approach to 5G will not work and a comprehensive effort by multiple stakeholders will be needed to ensure the potential economic benefits associated with these new technologies become a reality.
- Aliv is uncertain on the use of its current supplier (Huawei) for any rollout of 5G, especially if the Non-Standalone version is used (which requires interworking with the existing 4G network). To have to change of suppliers in order to meet certain political objectives (such as a reduction in reliance on Chinese suppliers) would impose additional costs on Aliv, making the case for investment more difficult.

The key issue that needs to be recognised more clearly in the Consultation Document is that the commercial business case for rolling out a 5G network in The Bahamas does not exist, at least for the medium term. Aliv has found that the forecasts for rapid growth in mobile data, on which many 5G business plans have been predicated, has not materialised. Furthermore, opportunities for additional revenues are very limited as customers are not willing to pay more for improved latency or unlimited data packages, and the number of mobile subscribers in The Bahamas has reached saturation.

URCA also has not addressed a second issue of national importance - the business case for 5G investment in two parallel networks in the Family Islands is not economic even over the long term, but a 5G network there would bring substantial economic and social benefits to residents and businesses. CBL believes that investment in 5G on the Family Islands would work if:

1. Only one operator builds a 5G network, making the network available to other virtual operators on a wholesale basis; Aliv, BTC and the Government would need to agree to such an arrangement
2. Business Licence and Communications Licence fees on 5G revenues from the Family Islands are waived for a period of time
3. Public support is available, for example from a Universal Service Fund.

CBL is concerned that URCA has not given sufficient consideration to the single network option, and urges it to set out the regulatory principles that would underpin such an arrangement when it publishes its Statement of Results. Examples of single 5G networks can be found in countries like Malaysia and Brunei Darussalam.

CBL also notes that, both domestically and internationally, mobile data growth is lagging behind projections from a few years ago, also in countries where 5G has been launched. The initial evidence is suggesting that the new ecosystems made possible by 5G take much more time than envisaged to mature. In addition to the issues listed above that require further attention before a clear business case for 5G can be developed, this raises questions on the appropriate timing and scope of sustainable 5G investments.

CBL now sets out its responses to the more detailed questions posed by URCA.

2. CBL response to URCA’s consultation questions

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.

CBL largely agrees with the key features and benefits set out by URCA in this section. For the user, 5G offers faster download speeds, lower latency (delay between sending and receiving data) and much greater network capacity, allowing more devices to be connected and larger applications to be developed. Such benefits were also confirmed by URCA’s stakeholders’ engagements inclusive of various industry focus groups conducted as part of its public consultation on the demand for enhanced internet connectivity and 5G in The Bahamas conducted in 2023 (ECS 06/2023).

5G also allows for network slicing, which enables different speeds and quality of services to be provided to different devices on the same network. As URCA sets out, this allows for the emergence of a variety of use cases, including Smart Home, Smart City, the Internet of Things (IoT), industry automation and other business improvements in manufacturing, financial services and healthcare etc.

As well as providing for users on the move, 5G can provide very high capacity to fixed devices through the use of intelligent antennae on the masts. They enable broadband speeds currently achievable only on fibre through the provision of fixed wireless access, thereby avoiding the need to install fibre in the ground. 5G MiFi therefore provides a viable and cheaper alternative to fibre-to-the-home, particularly in the Family Islands, where the business case for such infrastructure is challenging.

However, CBL cautions URCA against over-enthusiasm for the benefits of 5G, which make little difference to the consumer experience relative to 4G, and are not likely to convince them to pay more for a 5G service. While forecasts for mobile data show exponential growth (such as those shown in Figure 1/page 9 of URCA’s Consultation Document), these forecasts are proving to be over-optimistic – below we show the forecasts produced by Ericsson in 2020⁵, and compare them with Ericsson’s current estimates (June 2024).

Figure 1: Comparison of Ericsson forecasts for mobile data per smartphone (GB/month/sub)

Region	Ericsson Forecast 2020		Ericsson Forecast 2024	
	2019	2025	2023	2029
Latin America	3.9	22.0	11.0	36.0
North America	8.5	45.0	19.0	59.0
Global average	7.0	25.0	17.0	42.0

Note: The Caribbean is included in the Latin American region

As the table shows, Ericsson’s 2020 forecast for 2025 in Latin and North America turned out to be twice the traffic levels experienced in 2023. Of course, forecasts are rarely accurate, especially if they are produced by a supplier with an interest in selling equipment. But URCA should therefore treat such forecasts with a healthy scepticism.

⁵ Ericsson Mobility Report June 2020

Furthermore, Aliv's own experience shows that the demand for mobile data has been largely static since the end of the pandemic in 2022, as shown below [Please treat this as confidential].



CBL hopes that this information will help URCA understand Aliv's position that the commercial rollout of 5G is not commercially viable at the present time.

CBL is aware that regional countries like Bermuda, the Dominican Republic, Guatemala, Mexico, Puerto Rico, US Virgin Islands, the Cayman Islands and also Guyana have recently made significant strides in the rollout of 5G, with countries like Trinidad and Tobago in the process of making available 5G spectrum to the industry. Some of these jurisdictions are direct competitors of The Bahamas in the tourism industry and other sectors and there is a risk that The Bahamas is slowly becoming less attractive relative to regional alternatives for tourist travel and business investment. If there is a national imperative for the rollout of 5G, despite the poor business case for it, the Government will need to consider whether it should provide further assistance to the operators.

CBL remains of the view that non-Standalone ("NSA") 5G is the most likely approach in The Bahamas, with a phased implementation approach, targeting more densely populated areas like New Providence and Grand Bahama first and then to more remote areas in the Family Islands. 5G is designed to work with 4G networks, so that 5G networks can provide high speed capacity where needed, and 4G can provide coverage at lower speeds elsewhere. NSA 5G enables interworking between 4G and 5G networks, with some upgrading needed to 4G networks. By layering 5G on top of existing 4G capacity, added flexibility is offered to provide capacity in hot spots, while allowing 4G to continue to support the data needs of the majority of mobile customers.

However, as described by CBL in its 5G business case previously submitted to URCA and as now acknowledged by URCA, the implementation of 5G in The Bahamas will require significant investments and the prospective incremental revenues are relatively modest and uncertain.

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.

CBL largely supports URCA’s description of the importance of 5G for The Bahamas.

The most recent draft Electronic Communications Sector (ECS) policy for 2023-26 was published in September 2023⁶. This document recognises the importance of ECS in the Bahamian economy, positioning it as a “critical pillar in national development and the attainment of social, economic and cultural growth of The Bahamas and people of The Bahamas”. The Government’s policy objectives for the ECS are set out as:

To further the interests of consumers by promoting competition and in particular (page 10):

- i. enhancing the efficiency of the Bahamian electronic communication sector and the productivity of the Bahamian economy;
- ii. promoting investment and innovation in electronic communications networks and services;
- iii. encouraging, promoting and enforcing sustainable competition in the sector; and
- iv. promoting the optimal use of state assets, including radio spectrum.

To further the interests of persons in The Bahamas in relation to the electronic communications sector by (page 11):

- i. promoting affordable access to high-quality networks and carriage services in all regions of The Bahamas;
- ii. maintaining public safety and security;
- iii. contributing to the protection of personal privacy;
- iv. limiting public nuisance through electronic communications;
- v. limiting any adverse impact of networks and carriage services on the environment; and
- vi. promoting the availability of a wide range of content services which are of high quality.

The Government will also implement measures to facilitate the availability of reliable, high-speed and high-quality connectivity throughout The Bahamas including, but not limited to, the following (page 25):

- i. continued engagement with relevant stakeholders and industry groups to understand and enable their use-cases for advanced mobile communication technology, including 5G;
- ii. creating a working group, inclusive of electronic communication service providers, relevant government industries and URCA, to monitor global advanced internet connectivity trends and to assess the implications for The Bahamas;
- iii. ensuring that there is a business and regulatory environment that enables a market-led provision of advanced mobile communications technologies, including 5G; and
- iv. educating the wider public and business industry on the benefits of advanced mobile communications technologies, such as 5G.

The improved capacity of 5G should facilitate considerable improvements in health, education and government services by enabling organisations to redesign their systems based on ubiquitous high-speed services. The Covid pandemic has underlined the importance of high-speed broadband access to virtual public services, such as on-line learning, “track and trace” systems and medical services, as well as for home working and in-home entertainment.

CBL believes, and it looks like URCA agrees, that 5G is essential to the Government’s efforts to position The Bahamas as a technology centre of our region and to establish New Providence as a “Smart

⁶ URCA Consultation document ECS 11/2023

Island". The Government has in the past identified government operations, health, education and national security as areas where technology can help improve life for Bahamians⁷ and 5G will add further impetus to these efforts.

The National Development Plan for The Bahamas⁸, sets out the need for a comprehensive ICT policy, including modern and high-quality infrastructure and a supportive regulatory regime. It also identifies ICT as a new growth sector, and proposes improved ICT education, further use of ICT technologies in Bahamian businesses and further investment in infrastructure⁹. 5G would play a critical part in helping these initiatives becoming realities.

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.

CBL agrees that all the factors listed have an impact on the viability of 5G roll out in The Bahamas.

In addition, Aliv has access to CBL's submarine cable capacity in New Providence, Grand Bahama, Abaco and Eleuthera, but relies on BTC for capacity to link the remaining Family Islands to its main data centres on New Providence and Grand Bahama. Substantial additional submarine cable capacity will be needed to support the increased traffic loads projected for 5G. However, BTC's leased line pricing for submarine cable capacity to these islands is excessive, reducing the viability of 5G investments being made. In addition, BTC's backhaul services are offered without protection, raising the risk of outages and disruption to customers. As recent experience elsewhere has shown, sub-sea cables are not immune to disruption, and additional resilience is required in BTC's submarine network.

Redundant dark fibre is the better solution to provide needed transmission capacities, and Aliv hopes that URCA will support it in ensuring that BTC provides dark fibre, as required under the Infrastructure Sharing Regulations, at a cost-based price. CBL notes that this issue has not been addressed by URCA in this consultation and would request URCA to investigate this matter further and revise its infrastructure sharing regulations, including access to dark fibre on land and sub-sea routes at cost-based prices.

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 type of use case?

CBL agrees 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.

⁷ <http://www.thebahamasinvestor.com/2017/bahamas-to-utilize-smart-technology/>

⁸ <https://www.bahamastradeinfo.gov.bs/buy/2017/07/14/bahamas-utilize-smart-technology/>

⁹ National Development Plan for The Bahamas Working Draft for Public Consultation. National Development Plan Steering Committee, 2 December 2016. Pages 270 – 274 and 417 - 424.

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.

[Redacted]

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.

CBL does not have further comments at this stage.

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.

CBL agrees with URCA that an auction would not be an appropriate mechanism to allocate 5G spectrum in The Bahamas. As URCA notes, auctions are appropriate when the objective is to maximise revenues. However, the Government’s objective is to provide reliable fast internet to all parts of The Bahamas, not revenue maximisation. A managed assignment process, in which detailed rollout requirements can be drawn up, is a better way of achieving the Government’s stated objectives. In any case, the difficult business case for 5G would mean that the revenues raised from any auction would be minimal.

An auction with only two known bidders would also be difficult to design and manage, and public confidence in its outcome may be low if there are accusations of collusion between the bidders.

[Redacted]

The managed assignment process described by URCA has the potential to offer an appropriate allocation mechanism in the context of the local market structure. This approach involves evaluating applicants based on a set of predefined criteria, such as network coverage commitments, service quality, and business/investment plans, rather than solely on financial bids. In 2012, URCA issued a licence to BTC for 4G spectrum in the 700 MHz band, which included conditions for the rollout of the network to the Family Islands. This approach may offer a template for a managed assignment process envisaged by URCA. Of course, the more extensive the coverage requirements both in terms of roll-out speed and population coverage targets, the more challenging the underlying 5G business case. As explained above, it is likely that any rollout of 5G will be of the Non-Standalone version, which uses interworking with 4G networks. Hence rollout will be incremental, and the experienced performance levels will be similar in most use cases, whether a 4G or 5G network is providing radio access. CBL therefore urges URCA not to set out concrete coverage targets for 5G, to allow the operators to implement rollout flexibly in line with evolving local demand and network loads.

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.

As part of this section, URCA has set out its preliminary views on the Spectrum assignment process parameters and spectrum license terms. CBL sets out its views on these in turn below.

Non-Price terms

Licence duration

CBL agrees with URCA that the 15-year license duration represents an adequate period for planning purposes and to ensure the frequencies are used efficiently.

Geographic scope of the spectrum license

CBL believes it is too early to determine whether 5G spectrum licenses should be issued on a national basis. This issue is closely linked to the decision to issue spectrum for a single shared 5G infrastructure in the Family Islands, or the decision to issue spectrum for two competing 5G networks with a national scope. CBL is of the view that an approach with two competing 5G networks will be highly inefficient and will delay the rollout of 5G services to the Family Islands further.

Coverage obligations

CBL agrees that it is common for mobile spectrum licenses to set out minimum geographic coverage requirements and associated timings for achieving these coverage targets. However, such coverage obligations for 2G, 3G and 4G spectrum would typically happen in the context of most coverage areas being economically viable. This is not the case with 5G and aggressive coverage obligations will have a detrimental impact on the business case for network rollout. This therefore requires further assessment.

Any requirements should relate to population and not geographic coverage, and suitable timeframes will need to be designed for all parts of The Bahamas based on a carefully constructed feasibility assessment.

Minimum network performance obligations

It is too early to develop general minimum network performance targets because the technical solutions will vary from area to area and because of the hybrid nature of 5G as an additional layer to

4G. Once the technology is more mature in The Bahamas, suitable quality of service targets on average (download) speeds, package loss, fault repair times, and/or latency may be developed.

Network resilience and restoration requirements

URCA will note that Aliv uses BTC for backhaul in the Family islands so the requirement to offer resilience and restore service would be dependent on other parties, not just Aliv. This will need to be addressed through binding SLAs on BTC as the wholesale provider of critical facilities in the supply chain of telecommunications services.

Performance indicators also need to be reasonable, achievable and be based on specific local circumstances. For example, a short restoration target after a hurricane would not be feasible in the situation where towers are destroyed. A temporary cell on wheels (COW) site will not give the same level of coverage and a tower may take six months to replace.

Price terms

Level and structure of the spectrum license fee

CBL understands that URCA anticipates that Licensees will again have to pay spectrum license fees for the 5G spectrum licenses. URCA states that it “does not anticipate the 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, incentivizing efficient use of the spectrum and recovering any costs of the award process”. It is CBL’s position that it is too early to determine if a spectrum license fee is due on any 5G spectrum and the decision to do so is closely linked to defined coverage obligations and the decision to opt for a single 5G network in the Family Islands. In the Family Islands, the economic value of the 5G spectrum is negative and 5G network rollout in these islands requires subsidisation, from potentially viable 5G areas like New Providence and Grand Bahamas and other sources.

Annual spectrum management fees

CBL notes URCA’s statement that it has to date not imposed an annual spectrum management fee on Licensees but URCA retains the right to introduce such annual spectrum management fees in future, including on the 5G spectrum licensees.

Performance bond

CBL is of the view that it would be wholly inappropriate for URCA to require a performance bond to secure coverage of 5G capacity. The Aliv performance bond alluded to by URCA was in support of the build-out of a new national network by a start-up operator. In this case, the aim of the bond is to ensure that the operator provides service in areas that are not profitable, essentially ensuring a cross-subsidy from the profitable areas, where the operator has a commercial incentive to provide service. Moreover, it is easy to establish whether the mobile service is present in the non-profitable areas through a simple drive test, enabling the national regulatory authority to decide whether the performance bond should be called in, or not.

This situation does not apply to Non-Standalone 5G, which will be the version of 5G appropriate to The Bahamas for many years. This utilises a fall-back to 4G where 5G service is not available, making it difficult to distinguish between 4G and 5G, and hence whether the terms of any performance bond have been met.

URCA also did not require a performance bond for 4G spectrum when the spectrum was awarded in a “beauty contest” for free upon the condition of a network build-out. It is unclear to us why URCA sees the 5G process being different from 4G, and hence why a performance bond is necessary for 5G.

The business model and business case for 5G are fundamentally different from previous spectrum generations like 2G, 3G and 4G. 5G will initially be added to 4G LTE network to provide needed additional data capacity in specific geographic areas in The Bahamas. Beyond these areas, the business case for 5G is challenging and highly uncertain. Imposing 5G coverage requirements throughout an archipelago of remote locations and sparsely populated islands, supported by a performance bond, will make the business case much worse. This is the opposite of what URCA should be doing. The reality is that an approach of ‘value prices as a scarce resource’ for 5G spectrum would result in *subsidies* being needed in many areas in The Bahamas to support rollout. This is the key policy challenge for 5G and it is not addressed by URCA in this consultation document.

Any rollout of 5G to the non-profitable islands will have to be supported by some form of public funding because the additional profits from commercially viable islands are insufficient to cross-subsidise non-profitable islands. The subsidy could be in the form of economic development support from the Government or a universal service subsidy. In either case, a contract would be required between the operator and the Government or operator of the universal service fund. This would include terms setting out rollout requirements and payment terms, and any performance bond would simply duplicate this and be completely unnecessary.

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.

Investment incentives for 5G

Aliv has previously carried out extensive work on the commercial business case for a 5G network in The Bahamas. As part of this work, CBL has forecast the likely demand for MiFi devices and 5G smartphones, and the anticipated growth in data consumption. The demand was compared to Aliv’s tower and spectrum capacity and to the capacity on its fibre backhaul routes, especially the inter-island routes. The additional capital and operating costs of the 5G network, along with the incremental revenues, were estimated. The key points coming out of this analysis were as follows:

- The scope for additional revenues is limited because customers will expect to pay only the existing or even lower prices for improved speeds and latencies (which is the experience of many fixed networks); in any case, the providers of content and applications (such as Netflix or Facebook) are better placed to gain any additional revenues than the operators.
- Mobile penetration in The Bahamas is high and the scope for additional customers is limited.
- The provision of fixed wireless access to the more remote islands will divert revenues from CBL’s broadband customers to Aliv, reducing the net increase in revenues to CBL/Aliv.
- The longer-term potential for additional revenues from 5G, such as from the Internet of Things, autonomous cars, etc, is outside the control of mobile operators, and is unlikely to materialise until after the planning period.
- The business case assumes that on New Providence and Grand Bahama the fixed network operators (BTC and CBL) will roll out fibre to most business and residential premises, competing strongly with mobile broadband.
- On the Family Islands the business case assumes that a fibre to the premises rollout will not be economic, and that therefore a 5G network will provide the only high-speed broadband access for businesses and consumers on these islands. Despite this, the business case is not viable because of the low population density, high coverage costs and the need for backhaul capacity on the inter-island submarine cables.

This work has thrown into sharp relief the dilemma facing the Government over the Family Islands – a prospect where New Providence and Grand Bahama have competing fixed and wireless high speed broadband networks, and the Family Islands have only the existing copper and 4G networks. Aliv believes the above identified issues largely still stand today. Unfortunately, the business case has become more difficult since then because the demand forecasts have not materialised. Nevertheless, the issues identified above still stand today.

Site approval

In addition to the normal planning processes, URCA requires a mobile operator to submit an application to it under the Infrastructure Sharing Regulations¹⁰ for every new cell site, so that URCA can evaluate whether co-location with an existing tower is feasible. A fast-track process for cell sites that have a minimal environmental impact and limited sharing potential would be desirable. Elsewhere governments have recognised the need to speed up approval processes to ensure the rapid deployment of 5G networks.¹¹ URCA could consider exempting smaller “lamppost” type 5G sites of no more than 10m tall from detailed site approval requirements. This would speed up the ability of the operators to roll out 5G infrastructure.

Infrastructure sharing

In order to assist the rollout of Aliv’s 4G network, URCA published its regulations on infrastructure sharing in 2015¹². These set out the processes for operators to follow for sharing infrastructure and for obtaining URCA’s approval for the construction of mobile towers. While infrastructure sharing can reduce the cost and environmental impact of new infrastructure, it reduces network resilience, an important consideration for the management of disasters such as hurricanes. The Cable Bahamas and Aliv towers are constructed to withstand a CAT 5 hurricane and Hurricane Dorian showed that this standard should apply to all towers in The Bahamas, particularly those shared with another operator. The rollout of 5G networks may require the construction of roof-mounted cell sites in dense areas and existing mobile towers will need fibre backhaul connections to the core network, including dark fibre on subsea inter-island cables.

The key issue not addressed by URCA in this consultation paper, and one with a significant impact on the business case for 5G in The Bahamas, is whether a decision is made that only one 5G network should be developed on the Family Islands, with BTC and CBL sharing capacity on this single network. Such an approach may take many forms, for example with CBL rolling out 5G capacity in pre-agreed areas (islands) and then offering access to this capacity to BTC on agreed terms. Such an arrangement would make the business case more viable, and URCA would exercise some oversight to ensure that any competition or regulatory concerns, such as excessive pricing or discrimination, could be addressed. This approach would also have implications for the spectrum allocation plans and associated rollout requirements. For example, operators should be able to trade and make available spectrum to each other and coverage obligations should take into account any national roaming arrangements.

CBL urges URCA to give more detailed consideration to the regulatory principles that should underpin any such sharing arrangement in its Statement of Results, as a single network may be the key to

¹⁰ URCA. Infrastructure Sharing Regulations. ECS 04/2015. 3 September 2015. Annex A

¹¹ For example, in July 2020 the UK Government approved the relaxation of the need for prior planning approval of the construction of new mobile towers below a certain height and the strengthening of existing towers in order to speed up the deployment of 5G networks. <https://www.gov.uk/government/consultations/proposed-reforms-to-permitted-development-rights-to-support-the-deployment-of-5g-and-extend-mobile-coverage>

¹² URCA. Infrastructure sharing regulations. ECS 04/2015. 3 September 2015.

providing 5G to the Family Islands. Examples of single 5G networks may be found in, for example, Brunei Darussalam and Malaysia.

We note that on page 14 of the Consultation Document URCA states that:

“In rural areas such as the Family Islands it is very likely that MNOs will be able to roll-out 5G without cooperation/mutualization.”

We believe that there must be a typographical error (for example, “likely” should read “unlikely”) because, as the preceding text shows, the business case for rolling out 5G throughout The Bahamas is “difficult”.

Power Supply

CBL is aware of the Individual Operating Licence obligations described by URCA in this section and the availability of power backup facilities is standard practice around the world and in The Bahamas. However, CBL is of the view that if mobile operators do their jobs, utility service providers should do theirs, too. CBL continues to experience significant outages of the main BPL electricity grid in its coverage areas. Such disruptions put a disproportionate burden on the mobile operators and 5G, with its increased capacity demands, will add significantly to this burden. Backup facilities as described by URCA are standard practice in the industry to deal with incidental outages but such facilities are not intended to deal with high frequency outages related to underinvestment in the electricity grid. CBL therefore proposes for URCA, as the regulatory authority for the electricity industry, and/or the Government to engage with the suppliers of electricity in The Bahamas to ensure the added demands on the electricity grid related to 5G may be supported and will not result in even more outages in the future.

Private 5G networks

CBL agrees that 5G private networks are likely to feature in the future, particularly in logistics hubs like ports. However, as of yet, the demand for 5G private networks in The Bahamas is nascent. When third parties decide to implement 5G networks in The Bahamas, more detailed discussions on network operation models and spectrum requirements will take place.

Health concerns

CBL agrees with URCA’s assessment that the introduction of a new technology using existing or new radio frequencies does not change the characteristics of those frequencies. This means that the ICNIRP guidelines which apply up to 300 GHz, and thus well above the frequencies proposed for 5G, remain valid. Therefore CBL, like URCA, expects there to be no adverse health effects from 5G, provided that 5G RF exposure levels remain below the ICNIRP guidelines for members of the public. However, public perception may be as important as reality in this case and concerns have been raised in The Bahamas about the impact of radio waves from 5G towers on public health without any scientific basis for these concerns.

CBL would therefore welcome further public awareness campaigns to explain the above and reassure the general public that 5G is safe. CBL is at URCA’s disposal to support the Ministry of Health and URCA, to plan and run such campaigns prior to any 5G services launch in The Bahamas.

CBL notes URCA’s plans to provide the general public with an increased level of transparency on Electromagnetic Field (EMF) measurements and to develop EMF Regulations. CBL would welcome these initiatives and is available for further detailed discussions to ensure these measures are fit-for-purpose.

Environment concerns

CBL shares URCA's provisional conclusion that there are no a priori environmental concerns with the deployment of 5G in The Bahamas. 5G is a more efficient technology to support the increased need for data capacity on mobile networks than 4G and, on the assumption that it is in the economic and social interest of inhabitants of The Bahamas that these data needs are met, 5G would reduce environmental concerns compared with a scenario where only 4G is offered. However, as is the case with the health concerns mentioned, there may be inaccurate information being made available to the public that could raise concerns unnecessarily and CBL would recommend for such environment concerns to be addressed in the public awareness campaigns to be launched to address any concerns on the health effects of 5G.