



The Bahamas Telecommunications Company Limited:

Response To

Public Consultation on the Utilities Regulation and
Competition Authority (URCA) Cost Efficiency Study

Consultation Document
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Legal, Regulatory and
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Executive Summary

The Bahamas Telecommunications Company Limited (BTC) welcomes the opportunity to respond to this Public Consultation on the Cost Efficiency Study of The Bahamas Telecommunications Company Limited (BTC) conducted by the Utilities Regulation and Competition Authority (URCA).

BTC has serious reservations with the methodology used in this efficiency study, and the preliminary conclusions derived in this Public Consultation Paper which propose that URCA should “apply a ‘median performer’ efficiency target” (page 42, para 2) is a cause for concern.

BTC is of the view that URCA’s adjusted benchmarking analysis does not support this preliminary conclusion because the analysis does not meet international standards. In particular, there are two (2) fundamental defects with URCA’s Study: firstly, URCA has failed to develop a suitable peer group of countries/companies; and secondly, the weak correlation of the various cost drivers suggests that many cost drivers are missing from the methodology. These two factors combined ensure that the ‘normalisation’ of URCA’s peer group will have systemic errors that are inflated by the great variation between the sample group countries.

In addition to these two (2) fundamental defects, URCA’s study has underestimated the impact of three (3) of the main drivers of network costs on The Bahamas; namely the lack of economies of scale, the reduced economies of scope and the costs of providing service on an archipelago.

Finally, URCA’s study addresses ‘total cost’ comparisons which includes access and retail costs which are not relevant for RAIO rates. URCA has also used an output for fixed line services which puts BTC at a considerable and unmerited disadvantage in the comparison by ignoring BTC’s high call usage per line. The end result of these weaknesses in the methodology used is a distorted and

overstated estimate of BTC's inefficiency, and BTC makes clear in this submission that the conclusions drawn by URCA are not supported by the data used and would benefit from a much more detailed analysis of the specific operational challenges of The Bahamas.

If URCA were to act on the efficiency study as presented by implementing price controls that require BTC to bring prices into line with the "median performer" levels of efficiency, BTC would likely have to reduce its wholesale prices between [REDACTED] and [REDACTED]. Such reductions would be extremely damaging to BTC's ability to invest in its network infrastructure and maintain its universal service obligations against competitors that do not share these social obligations. BTC is satisfied that URCA would then fail to meet the objectives of the Communications Act 2009 to promote investment and competition (Section 4, subsection (a) (ii) and (iii)), and would have failed to take into consideration the impact of its measures on BTC in contravention of Section 5 (d) (ii).¹

In this response BTC has concluded after a detailed review of URCA's proposed conclusions that URCA should not implement the results of the efficiency study on the basis that it is not fit for purpose. BTC welcomes an opportunity to discuss with URCA the future of regulatory controls on its wholesale prices, and how they may be used to the greater benefit of telecommunications customers and the industry.

General comments

The efficiency study is premature

In conducting this Public Consultation on the Cost Efficiency Study of The Bahamas Telecommunications Company Limited (BTC), it is important for URCA to appreciate circumstances of the marketplace in The Bahamas today.

¹ Communications Act (2009): Section 4, Subsection (a) (ii) and (iii) and Section 5(d) (ii), page 14.

- Competition in the fixed market in The Bahamas is still in the embryonic stage relative to many other markets in the Caribbean, and telecommunications liberalization has yet to be implemented in all sectors of the telecommunications industry. As a result, market pressures on BTC to become more efficient are starting to have an impact only recently and the company should be given more time before URCA attempts to intervene.
- A majority share of BTC was only recently acquired by the English based Cable and Wireless Communications Company Limited (C&W) from The Bahamas government, and C&W has just recently implemented fundamental structural changes to the business (including a reduction in staff and revaluation of the asset base). Where BTC's costs are high, these are due to the costs imposed by its recent government ownership (such as high wage rates and political pressure to employ staff), and the new owner needs time to address these legacy costs. Again, time is needed for these changes in the cost base to work through to BTC's pricing.
- As URCA is well aware, BTC's Separated Accounts are not yet stable, and hence do not provide a good basis for measuring BTC's performance in an efficiency study. Based on the feedback from industry sources it takes approximately five (5) years for these accounts to be stabilized and perfected.

BTC will bear substantial costs of regulatory intervention

In light of these fundamental factors, BTC urges URCA to account for the significant costs of regulatory obligations that it seeks to impose, and give careful consideration to ensure that these costs are proportionate to the problem it seeks to remedy. Regulatory intervention is not without cost. It should occur only when demonstrated to be necessary, and it should be imposed in a manner that is

least burdensome for the affected, yet sufficient to achieve its social objectives. Enforced reductions in BTC's wholesale prices of up to 60% would substantially damage BTC's ability to fund its ongoing operations, let alone invest in new network and services. BTC has serious concerns that URCA may not have given proper consideration to these factors or appreciate the real risk to the company of making the adjustments to the company's cost structure in the manner it has proposed in this Public Consultation.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

BTC's Answers to URCA's Consultation Questions

Question #1: Do you agree with URCA's rationale for investigating BTC's cost efficiency? Please detail your answer in full.

BTC is in agreement that, given that BTC's RAIO charges are based on historic cost accounting, there is a need to review the cost efficiency of BTC's unit cost that support BTC's RAIO services. However, BTC disagrees with the **timing** of the Efficiency Study, given the challenges associated with producing stable separated accounts outputs at this time and the associated risk for the long run promotion of competition in the sector.

Question #2: Do you agree with URCA's preferred approach for the efficiency study, taking into account URCA's rationale for the Study and the current data availability? Please detail your response in full.

BTC is of the view that an adjusted benchmarking exercise, when properly executed, could provide some insights into relative efficiency of operators. However even in those circumstances the results should not be used in isolation to set tariffs, and tariff benchmarks should also be used to ensure that tariffs in The Bahamas are not disproportionate with international practice.

However, BTC believes that URCA's present approach is so flawed that it cannot be used as a basis to adjust downward BTC's unit costs that are used as a basis to derive wholesale prices.

Question #3: Do you agree with URCA's adopted approach for assessing BTC's relative efficiency; and its recent productivity trends? Please detail your response in full.

BTC emphatically disagrees with URCA's underlying methodology and the results derived in this Public Consultation in assessing BTC's relative efficiency

and productivity trends. The following are some of our specific concerns about the study presented:

- **Development of the peer group** - BTC believes that URCA has not followed well established principles to implement an efficiency study based on adjusted benchmarks and appears to have developed a methodology that is based more on data availability than on its suitability to assess cost levels in The Bahamas. The result is a comparison of BTC's costs with costs incurred by operators in countries with significantly different operational and demographic circumstances. It is BTC's position that the evidence is irrefutable that URCA has failed to develop a suitable peer group of countries/companies and has therefore failed to implement this most fundamental first step to any benchmarking exercise.

BTC has reviewed URCA's peer group and compared the various potential drivers across the sample to illustrate this point. The results are as follows:

Figure 1 – Characteristics of the peer group

Fixed Operator Unit Costs Analysis

	Country	Total	Population	GDP	Level of	Fixed	Archipelago	Land	
		Population	Density	per Capita (\$)	Urbanisation	Penetration		Area (km ²)	
BTC	Bahamas	353,658	35	30,900	84.0%	37.7%	Yes	10,010	
1	BTC-M3	Bermuda	64,237	1,190	69,900	100.0%	89.0%	No	54
2	C&W Barbados	Barbados	276,302	641	23,600	40.0%	50.3%	No	431
3	C&W Jamaica	Jamaica	2,705,800	250	9,000	53.0%	9.6%	No	10,831
4	Digitel Telecom	Philippines	94,013,200	315	4,100	65.0%	7.3%	Yes	298,170
5	Indosat	Indonesia	237,641,326	131	4,700	52.0%	15.8%	Yes	1,811,569
6	Invitel	Hungary	9,985,722	111	19,600	68.0%	29.8%	No	89,608
7	JT Telecom	Jordan	6,279,100	71	5,900	78.0%	7.9%	No	88,802
8	Lattelecom	Latvia	2,049,500	33	15,400	68.0%	23.63%	No	62,249
9	O2 Telefonica	Czech Republic	10,548,527	137	25,900	73.0%	22.9%	No	77,247
10	OTE	Greece	10,787,690	83	27,600	61.0%	45.8%	Yes	130,647
11	Slovak Telecom	Slovakia	5,445,324	113	23,400	56.0%	20.1%	No	48,105
12	Telecom Argentina	Argentina	40,117,096	15	17,400	92.0%	24.7%	No	2,736,690
13	Telmex	Mexico	112,336,538	58	15,100	77.0%	17.5%	No	1,943,945
14	TEO	Lithuania	3,195,700	51	18,700	67.0%	22.1%	No	62,680
15	T-Hrvatski	Croatia	4,290,612	77	18,300	57.0%	42.4%	No	55,974
16	TP-SA	Poland	38,092,000	125	20,100	61.0%	20.0%	No	304,255
17	Vivacom	Bulgaria	7,364,570	68	13,500	71.0%	29.7%	No	108,489

Sources: CIA World Factbook, World Bank, ITU

In spite of URCA's findings, all of the drivers in this table are likely to have an impact on the unit costs of providing telecommunications services in

these countries, particularly drivers like population numbers and service penetration that drive scale effects. The table shows the huge variation across the sample in for example, population size (the largest population in Indonesia is a factor 3,699 larger than that of the smallest in Bermuda), population density (the highest density in Bermuda is 81 times that of the lowest in Argentina) and land area (the largest country Argentina is 50,679 times larger than Bermuda which is the smallest). In addition, only three of the countries listed in the sample are archipelagos but again are dissimilar from each other in most respects. It is clear from this table that these countries do not represent a sound starting point for comparisons with the Bahamas and any study based on this sample is very likely to be flawed.

Furthermore, three operators included in the sample (Digitel, Indosat and Invitel) are not incumbent operators, and do not have the legacy costs carried by an incumbent operator. They should therefore be excluded from the sample. A large proportion of the remaining operators have been under private ownership or in a competitive environment for several years, and thus have had time to remove inefficiencies. Again, comparing BTC to operators at fundamentally different points in the market liberalization 'cycle' does not provide a fair comparison because BTC needs time to adjust its cost base. The comparison would be much more representative were it to compare BTC's cost structure with that of an appropriate sample of operators one year after liberalisation in each of their respective countries.

Economies of scale and scope are ignored – It is well known that the telecommunications industry is subject to the economies of scale, that is the cost per unit of output falls as the volume of output increases. This is because substantial investment, in network, traffic management and a sales network, is necessary before a line can be connected or a minute of traffic carried. Indeed, the existence of powerful economies of scale, and the market power that they bring, is the driving force for regulation. It is

therefore surprising that this factor has not been included in URCA's list of adjustment factors (see Table 5, page 23 of the Consultation Paper).

We have compared the effect of economies of scale, as measured by the number of fixed lines and mobile subscribers for each operator listed in Table 4 of the Consultation Paper. We found that the relationship between economies of scale and the output measures used by URCA, fits better as a logarithmic scale² rather than a linear scale, and we give the regression co-efficient for these relationships below:

Figure 1: regression coefficients for economies of scale

Output measure	R ² for economies of scale (log)
Fixed cost per line	0.165
Mobile cost per minute	0.136
Connections per employee	0.422

BTC notes that these regression coefficients are higher than GDP per capita for the mobile cost per minute, and higher than urbanization and area for connections per employee, which are shown as significant factors (see Table 6, page 24 of the Consultation Paper). BTC therefore considers that if economies of scale are included in URCA's analysis, the results would be significantly different. As BTC is a small operator, the lack of economies of scale will explain some of the high costs of its operation, and BTC urges URCA to give fuller consideration to this factor.

Economies of scope, whereby an operator's costs fall per unit of output as the range of its services increases, also play an important part in determining the cost structure of incumbent operators. As this table shows, some operators, including BTC, do not provide television services and therefore do not have the same economies of scope as the other operators:

² We note that the correlation co-efficients for population, population density and area are also improved with the use of a logarithmic scale. URCA makes no reference to having carried out any data manipulation to provide a better correlation, and BTC considers that this is an additional weakness of the approach used by URCA.

Figure 2: Economies of scope for fixed operators

Operator	Country	Fixed	Mobile	Internet	Television
BTC	Bahamas	✓	✓	✓	X
BTC-M3	Bermuda	✓	✓	✓	X
C&W Barbados	Barbados	✓	✓	✓	✓
C&W Jamaica	Jamaica	✓	✓	✓	✓
Digital Telecom	Philippines	✓	✓	✓	X
Indosat	Indonesia	✓	✓	✓	X
Invitel	Hungary	✓	X	✓	✓
JT Telecom	Jordan	✓	✓	✓	x
Lattelecom	Latvia	✓	X	✓	✓
O2 Telefonica	Czech Republ	✓	✓	✓	✓
OTE	Greece	✓	✓	✓	✓
Slovak Telecom	Slovakia	✓	✓	✓	✓
Telecom Argentina	Argentina	✓	✓	✓	X
Telmex	Mexico	✓	X	✓	X
TEO	Lithuania	✓	X	✓	✓
T-Hrvatski	Croatia	✓	✓	✓	✓
TP-SA	Poland	✓	✓	✓	✓
Vivacom	Bulgaria	✓	✓	✓	✓

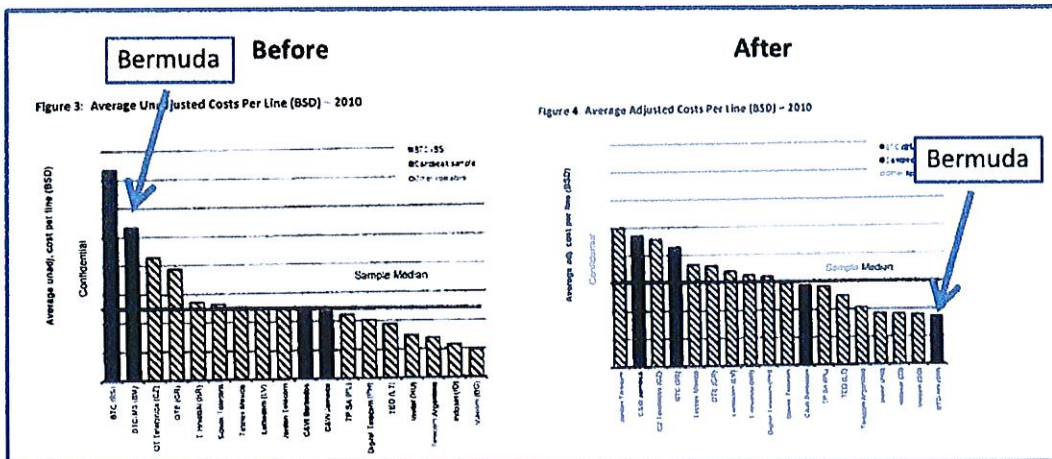
Source: operators' websites

URCA has not taken economies of scope into consideration; had it done so, BTC considers that a different picture of BTC's efficiency levels would be shown.

- **Disproportionate impact of GDP per capita** – BTC has looked specifically at GDP per capita, as this appears to be the main adjustment factor in URCA's 'normalisation' process, certainly for fixed services. Clearly, GDP per capita has the potential to increase wage rates (footnote 40 of the Public Consultation Paper) but wages are typically only a small percentage of the total costs in developing countries (where wages are low) and the regression factors of 0.34 and 0.65 for GDP per capita on fixed operator unit cost and mobile operator unit cost respectively cannot therefore be explained on this basis alone. The other impact of a high GDP per capita is that it corresponds with higher demand

and improved affordability, which in turn increases penetration rates and/or calling rates per line and both of these correlations tend to correspond with increased scale economies and reduce costs. Therefore, BTC is of the opinion that GDP per capita a poor factor to use (particularly as the main normalization factor) as it controls for multiple varied effects and is not a direct driver of costs. The only merit to using GDP per capita is that data are easily available, but that is a poor basis upon which to justify a policy decision. The impact of using GDP per capita as the main factor to adjust for differences between the peer groups has, not surprisingly, a major impact on the cost data presented because of the substantial differences between the countries. Let us examine what happens to the costs per line from Bermuda in the graphs before and after adjustments to the sample.

Figure 2 – Impact of GDP per capita adjustments



The costs per line in Bermuda go from being the highest in the sample (outside The Bahamas) to being the lowest, largely on the basis of differences in GDP per capita and only to a small degree compensated by the 'archipelago factor'. This also shows the impact of ignoring scale economies which are likely to be small in Bermuda. The lack of scale undoubtedly is one of the main reasons why the unadjusted costs per line in Bermuda are high (as they are in The Bahamas). The adjusted cost per

line in Bermuda is then used to support URCA's conclusion that BTC is inefficient as it drives down the median of the sample. BTC would dispute strongly that GDP per capita would have this sort of an effect on the costs of providing telecommunications services anywhere and URCA would be wrong to base any policy decisions on such analysis.

- **Statistical significance is overstated** – in footnote 34 (page 25 of the Consultation Paper) URCA states that in order to increase the statistical significance of the sample, operator data for both 2009 and 2010 was used. This is a mistake – samples should consist of independent observations, but here the 2009 data for an operator is closely related to the 2010 data for the same operator. Hence the sample should include only one year's data, and BTC believes that this correction will reduce the statistical significances by at least half. This basic mistake has a fundamental impact which is negative on the reliability and scope of the whole of URCA's analysis.
- **Poor correlations to support the study** – The analysis shows weak correlations between the drivers of costs and cost levels. This is a particularly disturbing feature of the study because a low degree of correlation, coupled with great diversity in the sample, is likely to lead to large and systemic errors in the normalization of the peer group. The range of footnotes under Table 6 spells out the flimsy nature of the regression analysis; footnotes 40-43 provide some explanation for why these particular regression factors might be significant but the linkage is very weak. For example refer to the cost driver Area. At the very least, Area has to be split into urban and rural, and coverage/penetration rates in each category have to be considered to get a feel for the actual cost effects. This factor affects both fixed and mobile networks, although the quantitative effect may be different. Ignoring this factor altogether in the study is likely to result in erroneous outcomes.

- **Underestimating the archipelago factor** – URCA’s consultation document suggests that the main impact on costs of providing service on an archipelago relates to the submarine cable network. BTC has the following comments on this:
 - *It is clear that a submarine network raises the costs of providing both mobile and fixed services and the ‘archipelago factor’ therefore affects all services analysed in the efficiency study, not just fixed services. It is really not very relevant whether URCA has found this factor ‘not to be statistically significant’ in its statistical analysis as this finding merely underscores the point that the approach is flawed, probably due to the small number (three – Greece, Indonesia and the Philippines) of archipelagos in the sample. The reality on the ground is that the submarine cable network is there, its costs are material and its costs affect both fixed and mobile services. While this factor is taken into account for the fixed network, it is ignored for the mobile network. This result is logically inconsistent, and shows the weakness of relying purely on statistical analysis without using knowledge and understanding of the telecommunications industry under review.*
 - The submarine cable network, while a material cost to BTC, does not provide the only cost impact. BTC also enjoys smaller scale effects on its network due to, for example, asset duplication. BTC has a small switch for fixed voice services on each island on which it provides fixed telephony services, whereas a much smaller number or large switches would be used if all subscribers were on the same island. For example, BTC has deployed 17 MDFs on Grand Bahama and New Providence providing service to an average of around 7,700 fixed subscribers per MDF, whereas BTC

has deployed 39 MDFs on the Family Islands providing service to an average of 590 subscribers per MDF. For mobile networks each separate island has to be treated as a separate geographical domain as well which results in losing the benefits of cell tessellation and therefore the ability to generate scale effects. Again this is borne out by BTC's operational data, with 42 BTSs providing service to an average of 9,000 mobile subscribers per BTS on Grand Bahama and New Providence, while on the Family Islands 73 BTS have been deployed providing service to an average of 730 subscribers per BTS. This clearly reduces BTC's ability to generate scale effects on its fixed and mobile networks even further and the company would inquire of URCA how it has taken account of such factors in its study through its 'archipelago factor'. The importance of this factor is such that URCA should not rely on the weak results of its analysis but instead should focus on the unique reality on the ground. BTC would of course be willing to support URCA in this process by providing more detailed information on the costs of providing service on the Family Islands, which is also relevant as part of a further investigation of BTC's universal service costs.

Inappropriate output measures – URCA's report suggests that suitable output measures are fixed lines and mobile traffic. BTC would recommend that a composite of lines/subscribers and traffic is used, particularly given that BTC's fixed line rental includes local calls. As a consequence, BTC's call volumes per line are likely to be much higher than those of the sample group and using lines as the sole output measure therefore disadvantages BTC substantially in the analysis. In addition, the efficiency study (which uses access lines as the measure for fixed services) is likely to be used for RAIIO call services which are traffic services, providing another good reason to opt for a composite approach.

Insufficient number of data points - BTC considers that URCA has not taken into sufficient account the limited number of observation points (i.e. number of comparable operators) used as part of the benchmark analysis. As URCA has pointed out in the Public Consultation Paper, 'As for the parametric analysis, a potential disadvantage associated with an adjusted benchmarking approach is the minimum sample of comparator operators that is required for the regression analysis.'³ While URCA tried to address this issue by taking data points across multiple years for the peer group, this embeds the systemic errors in the analysis while not increasing the statistical validity of the results (see above). As a result, BTC cannot see how URCA can justify any useful policy measures, in particular such critical measures as price controls, based on such weak data and methodologies.

- **Use of fudge factors** – BTC sees in footnote 42 (page 25 of the Consultation Paper) that URCA restricts the impact of a factor to 100%. It provides no justification of the choice of 100% (as against 10% or 50%), and no indication of the impact of such an arbitrary control on the results of the study. The fact that exogenous factors can produce variations in excess of 100% indicates to BTC the very large variations in data used in the benchmarking exercise and hence the lack of reliability of the outputs from the exercise.
- **Use of purchasing power parities** – in international benchmarking analyses it is preferable to use purchasing power parities rather than exchange rates as these give a more stable basis for comparison. Exchange rates are subject to the daily vagaries of the international exchange markets, whereas purchasing power parities, which measure the amount of money required to purchase a set of goods and services, provide a stable basis for comparing international costs. PPPs are

³ URCA's Public Consultation Document on the Cost Efficiency of The Bahamas Telecommunications Company Limited, pg.14

available for all the countries in URCA's sample (for example, see <http://unstats.un.org/unsd/mdg/SeriesDetail.aspx?srid=699>).

- **Impact of universal service costs** - BTC is concerned that there is no discussion by URCA in this Public Consultation Paper on BTC's Universal Service Obligation (USO) and the underlying cost associated with the company fulfilling its USO as part of URCA's benchmark analysis. Universal Service Obligation (USO) is a significant cost driver for BTC and should be taken into consideration, particularly because URCA has committed to a review of universal service.

Question #4: Do you agree with potential policy conclusions drawn from the preliminary efficiency study results? Please detail your response in full.

Given that the overall methodology is so flawed, BTC disagrees with any preliminary results that are derived based on the approach used in this Public Consultation. Before any meaningful conclusions can be drawn, a number of changes to this study should be made. BTC is of the view that adjustments for scale effects, wage rates, calling rates per line and demographics (archipelago factor and urbanization) should all be made to get reasonable outcomes. Such an approach is for example used in Trinidad and Tobago by TATT, where a total of eight factors were used in the benchmarking analysis⁴.

The efficiency study analyses relative total cost levels of BTC which are largely made up of access and retail costs. It is BTC's position that the results of such an approach should be treated with great care when used to set wholesale tariffs like RAIO call services which are driven by core network costs. Given the scope for error in the methodology presented, it would also seem sensible to check RAIO tariffs against current regional practice to ensure that tariffs in the

⁴ Telecommunications Authority of Trinidad and Tobago. The Costing Methodology for the Telecommunications Sector. May 2008.

Bahamas are not set below costs. Such regional tariffs are typically based on estimates of core network costs to provide call services and therefore form a more robust basis to set rates than an efficiency study which is largely based on irrelevant cost categories.

Finally, BTC does not agree that any changes should be made to its mobile termination rate on the basis of inefficiency estimates. The level of this rate (the only mobile RAIO service) has no bearing on the development of the domestic market because in The Bahamas a Receiving Party Pays (RPP) principle applies. For domestic traffic, OLOs are therefore not affected by the level of this tariff and the impact is solely on international traffic and providers. The company notes here that a lowering of the mobile termination tariff would only benefit international operators as they would pay less for termination of traffic in The Bahamas. This would put operators in The Bahamas at a disadvantage to their international trading partners, particularly those with substantial traffic flows and higher termination rates than those in The Bahamas (like Jamaica and Haiti). This currently impacts mostly on BTC but will, in time, affect all operators in The Bahamas that provide international call termination services on their networks. BTC would therefore strongly suggest that mobile termination rates should be set based on international precedence and not on the basis of an efficiency estimate.

Conclusion

BTC considers that the cost efficiency study described in URCA's Consultation Paper is so full of methodological and statistical flaws that no reasonable regulatory authority can use it as a basis for decision making, especially for the regulation of wholesale prices which will have such a large impact on BTC's revenues and ability to invest in new networks and services. If URCA were to use the results of the efficiency study, BTC believes that such an action would be contrary to the objectives of the Communications Act 2009 and render URCA deficient in its obligations. It is BTC's conclusion therefore that this Study should be abandoned by URCA as its flaws render it not fit for purpose.

BTC however would welcome a discussion with URCA about the future of price controls and how BTC might be given reasonable incentives to become more efficient.

Reservation of Rights

BTC has addressed the issues but reserves the right to comment further on all issues and states categorically that the decision not to respond to any issue raised on this Consultation in whole or in part does not necessarily indicate agreement in whole or in part with URCA's position; nor does any position taken by BTC in this consultation mean a waiver of any of BTC's rights in any way. BTC expressly reserves all its rights.

Legal, Regulatory and Carrier Services Division
The Bahamas Telecommunications Company Limited (BTC)
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