



GUIDELINES FOR CALCULATING THE NET COST OF THE UNIVERSAL SERVICE OBLIGATIONS FOR THE BAHAMAS TELECOMMUNICATIONS COMPANY LIMITED

CONSULTATION DOCUMENT

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1. INTRODUCTION

These Guidelines provide guidance to BTC on the approach that BTC is required to adopt in its calculation of any net cost associated with its provision of its designated universal service obligations (USO) under section 119 and Schedule 5 of the Communications Act (“Comms Act”). In these guidelines, the Utilities Regulation and Competition Authority (“URCA”) provides an indicative operational methodology for the calculation of BTC’s net cost, which URCA expects BTC to comply with when submitting any USO claim.

These guidelines follow URCA’s Statement of Results and Final Decision “*Framework for the Clarification and Implementation of Existing Universal Service Obligations (USO) under Section 119 and Schedule 5 of the Communications Act 2009*” [ECS 01/2013] in which URCA concluded that BTC should undertake a calculation of its net cost should BTC wish to apply for compensation.

These guidelines focus on the first step related to the quantification of the net cost of the USO by BTC, which is the first of several steps to be carried out by BTC before URCA can consider whether the estimated net cost of the USO constitutes an unfair financial burden on BTC and whether compensation is warranted. The determination of whether an unfair financial burden exists rests with URCA – although BTC will be expected to make its own assessment on the unfairness of the burden and present it to URCA as part of its application for compensation. These guidelines set out the elements of such an assessment.

1.1 Universal service obligations

BTC has been entrusted in section 119(1) and Schedule 5 of the Comms Act with the provision of the following universal services:

- Affordable fixed voice telephony, inclusive of access and toll calling to all populated areas in The Bahamas at a uniform price;
- Affordable dial-up internet services at uniform price;
- Free dial-up internet services for designated Specified Institutions; and
- Public access to pay apparatus.

The requirement to provide nationwide fixed voice telephony under the USO excludes the provision of such services to inhabitants of privately owned islands. BTC is free to choose whether it serves private islands and how it charges for access to a line and electronic communications (i.e. the USO uniform price constraint does not apply in these circumstances).

1.1.1 BTC Implementation Plan

The operational definitions of the above obligations will be set out in BTC’s Implementation Plan.

The Implementation Plan shall include the operational definition of populated area for the purpose of the USO obligations as contained in ECS 01/2013, the minimum requirements with respect to the number and locations of public pay apparatus, and the quality features of the provision of access to fixed voice telephony and BTC's USO internet service.

1.2 Overview of methodology for USO net cost calculations

URCA may, pursuant to section 44(3) of the Comms Act, apply the universal service fund to the installation and maintenance of networks and the provision of universal services in areas where the *“gross avoidable costs of providing the universal service exceed the revenues derived from those services”*.

1.2.1 Methodology documented in these guidelines

As noted by URCA in its Consultative Document ECS 12/2012 entitled *“Framework for the Clarification and Implementation of Existing Universal Service Obligations (USO) under Section 119 and Schedule 5 of the Communications Act 2009”*, the Net Avoidable Cost (NAC) is the widely accepted approach to measure the loss in profits incurred by the USP due to it having to meet the USO (i.e. the net cost). This approach is an operational method that seeks to measure the cost incurred in meeting a USO by comparing the profits realised by the USP with and without the USO and has been widely used in the electronic communications sectors (electronic and postal) globally.

Under this approach, the overall net cost of the USO to BTC under the NAC approach will be made of four elements:

- The net cost of providing USO services to uneconomic islands;
- The net cost of providing USO services to uneconomic customers in economic islands;
- The net cost of offering special tariffs to designated Specific Institutions; and
- The net cost of providing public pay apparatus.

In calculating the net cost of providing USO services on an uneconomic island, the NAC approach would:

- Identify the islands on which the USO services generate less revenues than their incremental costs and hence would be classified for purposes of the USO as being loss making;
- Aggregate the net losses of the loss making islands as identified above.

As set out in the next section, URCA proposes any net cost calculation be done at the level of individual islands. The islands on which BTC incurs a net loss from the provision of USO services will be deemed *“uneconomic islands”* and those that are profitable will be deemed *“economic islands”*. As the assessment is concluded *ex post*, a net cost calculation can only be carried out for islands that have already been served with USO services by BTC.

In addition, there may be customers in economic islands who are abnormally expensive to serve and, hence, are not profitable even if they generate a revenue per subscriber similar to the national average. For the purpose of these guidelines these customers will be called “uneconomic customers in economic islands”. The net cost associated with the provision of USO services to these customers, if such a cost exists, will be included in the overall net cost of the USO.

The third element of the net cost of the USO arises from BTC’s requirement to provide dial-up internet free of charge to Specified Institutions.¹ This special tariff obligation generates by definition a net cost that is also to be included in the overall net cost of the USO.

The fourth element refers to the net cost of providing an adequate availability of public pay apparatus across the country. In this regard, the net cost of public pay apparatus is already accounted for in the calculation of the net cost of uneconomic island in the proposed methodology (first element). Therefore the methodology focuses on calculating separately the net cost of the public pay apparatus in economic islands only (as part of this fourth element).

In summary therefore, BTC’s total direct net cost of providing USO services comprise the sum of the following elements:

- Incremental cost minus foregone revenues of serving residential and business customers on uneconomic islands, which includes the costs of providing payphone services in those islands;
- Incremental cost minus foregone revenues of serving uneconomic customers in economic islands;
- Revenue to be made in serving specified institutions in both economic and uneconomic islands; and
- Incremental cost minus foregone revenues of uneconomic public pay apparatus in economic islands.

Any intangible benefits associated with the provision of the USO shall be deducted from the direct net cost of the USO. Four intangibles identified in the Statement of Results and Final Decision [ECS 01/2013] should be further considered by BTC in calculating the net cost of the USO: brand recognition, ubiquity, lifecycle benefits, and marketing.

BTC is required to provide its estimate of the overall net cost of the USO and all supporting evidence and assumptions as part of any application it chooses to make to URCA for compensation. URCA will review the robustness of this estimate and establish whether the estimated net cost of the USO constitutes an unfair financial burden upon BTC. Where URCA concludes that an unfair financial burden exists, such a finding is expected to trigger the activation of a compensation fund.

¹ Namely, public and church operated schools, public libraries, public hospitals and public medical clinics, senior citizens homes and orphanages.

1.2.2 Critical elements of a net cost calculation

The net cost calculation rests on three critical elements.

1) Identification of activities and network components costs that would be avoided absent the USO

The net cost of the USO would be driven by those costs that BTC would avoid and the revenues it would forego in the event that BTC no longer provided USO services.

An essential part of this exercise therefore, will be for BTC to identify the network components and activities that would not be required if BTC suspended the provision of its USO services only, in a given island. This will establish whether a cost item is truly avoidable or not as BTC continues to serve customers who do not subscribe to the USO services.

2) Valuation of avoidable costs

Having completed the assessment above and identified those cost items that would be avoidable if it was not required to provide its USO services, BTC would be required to determine the value of the avoidable costs. In order to obtain a true estimate of the net cost of the USO, the level of avoidable costs should be those a new operator would save, that is, the costs that would reflect the latest and most efficient technology with an optimal network configuration. This is often referred to as “forward looking costs”. To derive the costs under such optimal configuration, URCA, as stated in its Final Decision ECS 01/2013, agreed that the USP should have the flexibility to build a bottom up cost model to derive estimates of long run incremental costs of activities or of products.

In the absence of requisite information to build a bottom-up model, URCA is of the view that BTC should use the actual costs of providing the USO with adjustments made for efficiency as appropriate. Such adjustment is necessary given that BTC’s cost accounting records are on a historical cost accounting basis (HCA).

URCA recognises that costs valued on a HCA basis do not depict the costs of a new entrant as best practice would require. Costs valued on a Current cost accounting (CCA) basis are recognized as being superior in that respect in that they depict the costs a new operator would face entering the market. CCA is therefore considered superior in an evaluation of the true avoidable costs of the USO. However, until URCA considers revision to the current costing methodology for separated accounts, URCA accepts that the net cost calculation shall be determined on a historical cost basis.

That notwithstanding, these guidelines can be applied with either a HCA or CCA approach. At this stage URCA accepts that costs will be valued on a historical cost basis for the purpose of the net cost of the USO calculation.

3) Cost data broken down by area

Another critical element to BTC’s calculation of the net cost of its USO is an understanding of how an activity/network component varies under different geo-demographic conditions. A net cost calculation rests on the availability of cost data broken down according to the main drivers of costs. For example, the unit cost of providing a line to a new subscriber in a rural

area may be higher than that of an equivalent line in an urban area. In such a situation, a net cost of the USO may arise as the USP is required to provide a service at a uniform price despite the fact that the cost of provision varies by geo-demographic zones. As a result, in this example, a subscriber line in the rural area would generate a negative contribution (uniform price is below to the cost of connection in a rural area) and a subscriber line in urban area generates a positive contribution to the USP².

The cost information, necessary for BTC to calculate its net cost, would be obtained, in part, from BTC's cost accounting records and in part from new statistical assessment of costs. These are discussed further in these guidelines.

1.3 Scope of the guidelines on application of the methodology

In developing these Guidelines, URCA has given consideration to a methodological approach that is:

- *Based on currently available data.* This ensures that the adopted approach is practical to implement and that the methodology chosen to calculate the net USO costs will be determined by the data that is largely currently available. The guidelines provide a view on the minimum required disaggregation of the cost data.
- *Transparent.* The methodology chosen would be easily understood by BTC.
- *Easy to update and flexible.* The selected approach allows the USO net cost calculation to be updated easily as data becomes available and is sufficiently flexible to be extended to incorporate the availability of new information types as BTC extends its network and service offering, if necessary, to meet its obligations under the Comms Act.

1.4 Consultation Process

URCA issues this consultation document in accordance with section 8 of the Comms Act which states that –

“For the purposes of carrying into effect the electronic communications policy objectives, URCA shall have the power to issue any regulatory and other measures and in particular shall –

(e) issue directions, decisions, statements, instructions and notifications;

URCA considers that its proposals for the assessment of the Net Avoidable Costs of Universal Services, conform specifically to section 8(1)(e) of the Comms Act. URCA proposes to provide directions, instructions and notifications to both BTC and CBL as to the manner that both BTC and CBL shall assess the Net Avoidable Costs of their respective universal services.

² Without variations in costs of providing the same service to different areas, the obligation of a nationwide service at a uniform price (matching costs) would not be a burden on the USP. Equivalently the obligation of providing a nationwide service where a same service can be charged at non-uniform price would not be binding on BTC

URCA considers that the approach set out in this document is of public significance as it involves:

- i. a major change in the activities carried on by URCA;
- ii. will significantly impact the activities carried out by a licensee operating in the electronic communications sector; and
- iii. significantly impacts on the general public of The Bahamas.

It is URCA's view therefore that the proposed Guidelines are a regulatory measure having public significance for the purposes of sections 11 and 12 of the Comms Act.

URCA shall therefore afford persons with sufficient interest a reasonable opportunity to comment on URCA's proposals. Subsequent to the conclusion of the consultation process, URCA will issue a Statement of Results after careful consideration of all the comments received.

1.5 Objectives of the Consultation

The objectives of this consultation are to:

- present URCA's approach to the assessment of Net Avoidable Cost claims by BTC; and
- invite feedback from BTC and the general public who would be most affected by URCA's proposal.

1.6 Responses to the Consultation

Responses to this consultation document should be submitted to URCA by 5:00 p.m. on 31 October 2014. Persons may send their written responses or comments to the Director of Policy and Regulation, either:

- by hand, to URCA's office at UBS Annex Building, East Bay Street, Nassau; or
- by mail to P.O. Box N-4860, Nassau, Bahamas; or
- by fax, to (242) 323-7288; or
- by email, to info@urcabahamas.bs.

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

URCA will carefully consider all comments and submissions received on the consultation on or before the deadline date specified above. At the end of this consultative period, URCA will review responses and publish a Statement of Results on the consultation.

1.7 Structure of the guidelines

The various aspects of the methodology are discussed as follows:

- Section 2 sets out how BTC is to calculate the net cost of the USO of uneconomic islands;
- Section 3 sets out how BTC is to calculate the net cost of uneconomic customers in economic islands;
- Section 4 sets out how BTC is to calculate the net cost of the USO special tariffs granted to Specified Institutions for the provision of internet (dial-up);
- Section 5 sets out how BTC is to calculate the net cost of USO public pay apparatus in economic islands;
- Section 6 sets out the calculation of the net cost should the treat reasonable profits (i.e., cost of capital) and potential cost efficiency improvements in the calculation of the net costs of the USO;
- Section 7 sets out how to calculate the value of intangible benefits associated with the provision of the USO; and
- Section 8 sets out the information to be provided by BTC as part of an application for funding, including that for an assessment whether an unfair financial burden exists.

2. NET COST OF UNECONOMIC ISLANDS

This Section of the guidelines sets out how BTC is to calculate the net cost of providing universal services to uneconomic islands.

It provides guidance on how to determine:

- whether an island is uneconomic (i.e., the USO provision is at net cost to BTC);
- the activities and network components that would not be necessary absent the USO; and whose costs would be avoided; and
- the foregone revenues.

2.1 Analysis at island level

In URCA's Statement of Results and Final Decision [ECS 01/2013], URCA stated that it would give further consideration to the reasonableness of an island as the unit of analysis when developing guidelines on the methodology for calculating the net cost of the USO. Having duly considered the various options, URCA is of the view that the net cost of the USO should initially be assessed at the island level. In URCA's view this level of analysis is not only pertinent in so far as it is consistent with the presumption that an operator would make its initial decisions about entering the market at an island level, but it also reflects the technical organisation of the communications network of an operator and takes account of the investment decisions and commercial activities of an operator not subject to a USO.

The calculation of net cost at this level consists of quantifying the difference between avoidable costs and the foregone revenues should BTC stop providing universal services to an island as a whole.

If the avoidable costs are larger than the foregone revenues, it is expected that BTC with full commercial freedoms would be better off not providing these services. In this situation the island is deemed to be "uneconomic".

If the foregone revenues are larger than the avoidable costs, it is expected that BTC with full commercial freedoms would be better off continuing to provide said services. In this situation the island is deemed to be "economic".

Based on the results of the 2010 Census published by the Department of Statistics, URCA posit that for the purposes of these Guidelines that there is a minimum of 16 islands for which a separate net cost of the USO may be calculated. In Table 1 URCA lists the most populated islands in The Bahamas, together with the surface area and population density of these.³ The least populated island is Ragged Island and the smallest (by surface area) populated island is Biminis (11 sq. miles).

³ Data from the national statistics also include in this list the Spanish Wells <http://statistics.bahamas.gov.bs/download/095485600.pdf>.

Table 1: Populated Islands

Names	Population size	Area sq. miles	Population density (per square mile)
1. Abaco	17,224	649	26.5
2. Acklins Island	565	192	2.9
3. Andros	7,490	2,300	3.3
4. Berry Islands	809	12	67.3
5. Bimini, Cay Lobos & Cay Sal	1,988	11	180.7
6. Cat Island	1,522	150	10.1
7. Crooked Island	330	84	3.9
8. Eleuthera, Harbour Is & Spanish Wells	11,515	200	57.6
9. Exuma and Cays	6,928	112	61.9
10. Grand Bahama	51,368	530	96.9
11. Inagua Islands	913	599	1.5
12. Long Island	3,094	230	13.5
13. Mayaguana	277	110	2.5
14. New Providence	246,329	80	3,079.1
15. Ragged Island	72	14	5.1
16. San Salvador & Rum Cay	1,039	90	11.5

Source: The Bahamas Department of Statistics 2010 Census. <http://statistics.bahamas.gov.bs/download/044192000.pdf>

2.2 Avoidable costs absent the USO

In assessing the net cost of the USO, BTC will have to identify the network elements that would not be necessary any more should it stop serving an uneconomic island; and those that will be unavoidable as it continues to provide other (non-USO) electronic communication services on the island that are independent of the access line. URCA notes that the network components in BTC's separated account may provide a suitable level of granularity for assessing which components are likely to be avoidable.

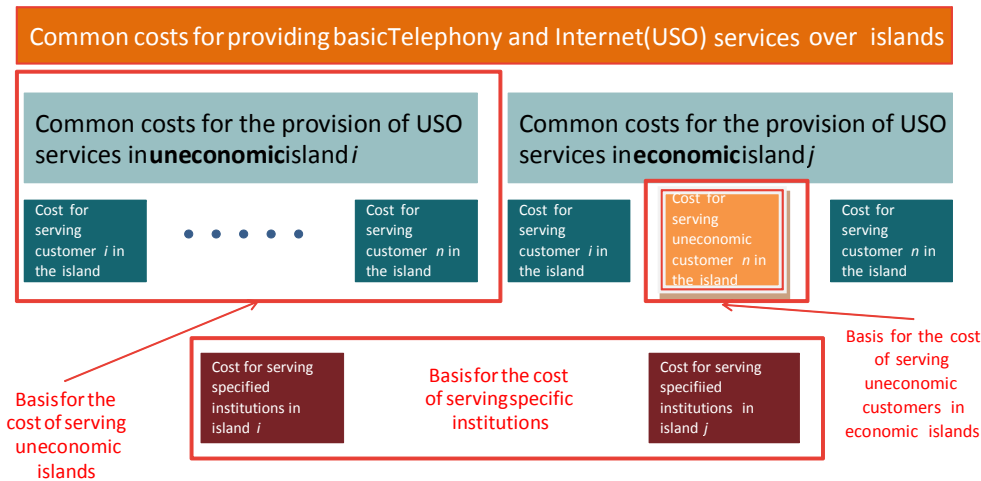
The avoidable costs to be considered are those related to providing access to subscribers (including Specified Institutions), electronic communications services (including internet services) over the subscriber lines and public pay apparatus.

BTC's separated accounts include an allocation of costs to network component and services according to whether a cost can be directly allocated to one component/ service; indirectly allocated or is common across all components or services. The basis of allocation is indicative as to whether a cost might be avoidable:

- Costs that are directly allocated to an activity and/or service can be expected to be fully avoidable;
- Costs that are indirectly allocated (or are joint costs) need further scrutiny as to whether they are avoidable;
- Costs that are common should be treated as unavoidable to the extent they are common to other non-USO services the USP would continue to provide on the island absent the USO; and to the extent they do not vary with traffic.

- Common costs that are only common to the provision of the USO services for a specific island would be treated as avoidable whereas common costs in managing all islands would be treated as unavoidable. This is illustrated in Figure 1.

Figure 1. Costs considered in the calculation of the USO cost



Source: URCA

2.3 Avoidable costs at island level

Ideally avoidable cost data would be available at an island level from within BTC's existing separated accounting system. However, where this is not the case, URCA is of the view that BTC should consider the following two options to estimate avoidable costs.

- BTC can undertake a geographically disaggregated cost allocation exercise for each of the main islands served by BTC and group all smaller islands together.
- BTC can conduct a statistical analysis on the variation of costs within and across islands and construct the costs of an island according to the mix of areas present on each island. This option is further discussed in the paragraphs below.

2.3.1 Variations in cost of providing access by zone

The net cost of the USO is caused by costs varying by geographical zones, whilst prices are uniform⁴. Therefore, URCA will review critically the robustness of BTC's approach and the application of the approach to the determination of cost variability – both which must be documented in detail by BTC as part of any application for compensation.

Further, given that the cost of providing an access line to a customer can vary significantly compared to the costs of services provided over these lines (e.g., calls), BTC's assessment of the variability of costs should focus on the variability of costs in providing access.

In that regards, BTC should firstly, divide an island into geographical zones according to different geo-demographic characteristics of serving customers living in these zones. This is

⁴ This is only the case where overall, the average revenue is set to cover all costs.

because these different geo-demographic characteristics lead to different costs of serving different zones. In coming to a view as to how cost of access vary under different geo-demographic characteristics (or equivalently cost drivers), BTC should use a bottom-up cost model, or network planning data. This exercise should allow BTC to obtain a unit cost of access per zone.

Secondly, BTC should allocate its subscribers on each island to the various zones that make up the island. Thereafter BTC should derive a weighted unit average cost of access for the given island, using the share of subscribers per zone as weight.

2.3.2 Cost of providing communication services over subscriber lines

The cost of providing communication services over the access lines will be assumed not to vary by zone (and thus by island either). On this basis the average national unit cost (e.g., cost per minute for call services) in the separated accounts is a good starting point to establish a cost estimate for such provision of electronic communication services.

One critical element necessary for the determination of the cost of the communications services delivered over the access line is measuring the quantities of the communications services (i.e. minutes) used by subscribers (). The most appropriate information set would be the actual usage of each individual subscriber. Where BTC cannot provide or obtain this information, BTC may consider a stratification of its subscribers for each service provided over the subscriber lines. For example, business subscribers may make and receive a higher volume of calls than households. As such, an island with a relatively higher proportion of business subscribers would be assumed to have a higher usage per line.

The simplest option for BTC would be to assume that all the average usage across all lines is the same. In this instance, BTC would take the average quantities per subscriber for a given service and the number of subscribers on an island to establish the cost of providing such services over the lines for an island.

2.4 Foregone revenues absent the USO

2.4.1 Foregone revenue from rentals, outgoing calls and internet (dial up)

The revenues foregone with the removal of USO services should be calculated as the sum of the products of the volumes of each universal service and their respective average revenue per minute (or monthly flat fee as applicable in the case of dial up internet)⁵.

2.4.2 Foregone revenue from incoming calls from other operators

Revenues foregone would also include the interconnection revenues of calls made by non-BTC fixed line customers based in the Bahamas or any customers based abroad. They will also include the interconnection revenues arising from mobile calls to fixed BTC customers. (Absent the USO subscriber lines, BTC would not earn these revenues anymore as callers couldn't reach their end recipients)

⁵ Since a service may be charged at a different rate during the day, URCA is of the view that BTC should use the average revenue. This will capture the mix of calls during the day on average in that year. Equally this might allow the situation where there are two-part tariffs.

2.4.3 Foregone revenue for other services dependent on the fixed telephony network

Absent the USO and with the (hypothetical) withdrawal of access lines, other services dependent on the fixed telephony network would not be available. This applies, for example, to leased lines, Digital Subscriber Line (DSL) Broadband Services and such revenues would be foregone absent the USO.

2.4.4 Foregone revenue from incoming calls from BTC customers on other islands

BTC would be required to give special consideration to incoming traffic from BTC customers located on another island. This is because the incoming revenue associated with BTC customers on one island is the outgoing revenue generated by BTC customers on another island.

To the extent that the foregone revenues of subscribers in an uneconomic island include revenues from incoming calls of BTC customers on another island; the revenues on this other island will correspondingly be lower. Hence, an iterative process is necessary to come to a view as to which islands are uneconomic. There is a need to reassess islands which may be deemed economic, taken into account received calls. As economic islands become uneconomic, then consideration is to be paid to the incoming calls from economic islands to the “newly” uneconomic island, etc. That is if service is no longer provided on island A, revenues from calls from islands A could no longer be included in assessing the profitability of island B.

In order to estimate the net cost associated with interconnection flows it is therefore necessary to have information on the traffic and revenues originated and terminated in the different islands and networks. Ideally, this would require the use of a matrix of calls and revenue flows of the following type as shown in Table 2. The cell of interest would be the totals reported in each column (X1, to X2n) for our purpose.

Error! Reference source not found.: **Call minutes and revenues from incoming calls – calls made by BTC subscribers**

		Traffic terminated in		
		Island 1	...	Island n
Traffic originated in	Island 1			
	...			
	Island n			
	Total	X1	X2	Xn

Source: URCA

2.4.5 Foregone revenues from public pay apparatus

The foregone revenues from public pay apparatus include both the outgoing calls made from public pay apparatus and other revenues, including for example the revenues from the sale of advertising space on payphone kiosks.

The revenues are given by the sum of the actual and specific public pay apparatus revenues per island. If these are not available, nationwide average revenue per payphone may be used instead.

Ideally BTC should seek to derive the specific advertising income for each payphone. Alternatively BTC may assume an average advertising income per payphone. In doing so, BTC will have to document its estimate of its average advertising revenue per payphone.

2.5 Net cost of the USO per island

The net cost of the USO for an island is derived from the difference between the aggregate foregone revenues (rentals, outgoing calls, fixed internet, service incoming calls, and public pay apparatus) and aggregate avoidable costs (for access and services relying on access) for the island as a whole.

From this first round of analysis, BTC will have determined the islands that are economic and those that are not. The sum of the losses made by each of the uneconomic island will correspond to the direct net cost of providing the USO to uneconomic islands.

2.6 Summary of critical elements of approach

The critical elements to the calculation of the net cost to uneconomic islands are:

- The variability in costs for the provision of access. This level of granularity of access cost data is necessary for any net cost calculation. In the absence of direct information on cost variability, these guidelines recommend a statistical assessment of costs for this.
- The variability in the quantities of service consumed by subscribers. If not available, an average usage for each communication service should be adopted until more relevant and appropriate data becomes available.
- The treatment of BTC subscribers on one island calling BTC subscribers on another island.

In Table 3 URCA summarises the key components of the calculation discussed above.

Table 2: Model to estimate the net cost of USP from uneconomic island

Avoidable costs
+ Access cost (weighted average unit cost per line (weight according to the zones that make the island) times the number of line on the island)
+ Communication costs (costs per call minutes times the relevant number of calls/minutes, for each call type – for the island as a whole)
Foregone revenues
- Retail revenue from Access (i.e. rental), Outgoing calls, internet services and ancillary services as applicable
- Wholesale revenue from Access, Outgoing calls and ancillary services as applicable
- Revenue from retail incoming calls
- Revenue from interconnect services as a result of domestic and international incoming calls (termination, transit etc)
- Revenue from other services (inc leased lines, DSL broadband)
= Net cost of an island

3. Net Cost of Uneconomic Customers in Economic Islands

Uneconomic customers exist in two types of islands. First, uneconomic customers may be large in number and predominate in an island, making the island overall “uneconomic”. Second, uneconomic customers may be in the minority and surrounded by economic customers, leaving the island economic to serve by BTC. These islands are called the “economic islands” for the purpose of these guidelines.

This Section sets out how BTC is to calculate the net cost of serving uneconomic customers in economic islands⁶.

This calculation of net cost of uneconomic customers in economic islands has to be carried out after the economic and uneconomic islands have been identified (as described in the previous section).

3.1 Definition of uneconomic customers

Conceptual definition

Identifying individual customers is not required in the first stage of the calculation of the net cost of the USO (i.e., the identification of uneconomic islands in Section 2 above) since the calculation is done at island level. However, identifying uneconomic customers in an economic island requires an analysis of net cost at individual level. This would be a more involved exercise that rests on evidence of the variability in costs of access (connection) at a high level of granularity.

URCA proposes that uneconomic customers in economic islands shall be identified by high costs of access, which exceed the revenue they generate, even if these revenues match the average nationwide revenue made per customer.⁷

In these circumstances and assuming that BTC were able to identify such customers individually, absent the USO it would choose to disconnect, having taking into account the possible impact on its branding of disconnecting these individuals.

3.2 Determination of the number of customers who are uneconomic to serve

Ideally, in performing the calculation of net avoidable cost for uneconomic customers BTC should seek to identify uneconomic customers individually. Where BTC is unable to do so, BTC may adopt a statistical approach to determine the set of uneconomic customers in economic islands. In the latter instance, BTC would be required to provide a set of evidence to URCA to justify how it has identified such set of uneconomic customers.

⁶ Whether these customers become economic over their life time is discussed under the chapter on intangible benefits.

⁷ The dynamic effects are dealt with as part of the intangible benefit called the “Life Cycle Effect”.

Assuming average usage, a customer could be uneconomic to serve if the costs of serving that customer are significantly above average. This could arise for two reasons:

- Some network elements may be dedicated to serve a particular (uneconomic) customer; or
- Some network elements for access used in much higher quantities for a particular customer when compared with an average customer (e.g., a customer may live further from an exchange, leading to higher access network costs).

3.3 Avoidable costs absent the USO

The avoidable cost of network elements used to serve uneconomic customers shall be based on information collected by BTC in preparing its separated accounts (e.g. cost per unit of network equipment).

To calculate the avoidable cost of services offered over these lines BTC should use the nationwide average unit cost of providing services times the quantities of services used by an average customer. (This is consistent with the approach to the average revenue per customer).

3.4 Foregone revenues absent the USO

To the extent that potentially uneconomic customer groups are not easily identified, their specific net revenues from non-access/communication services may not be identifiable. The national average outgoing revenue per customer can therefore to be used as alternative estimate. The revenue foregone from incoming calls received by uneconomic customers should also be accounted for in calculating revenue foregone absent the USO.

The average revenue for electronic communications as identified – plus the line rental – will constitute the foregone revenue per uneconomic customer on an economic island.

3.5 Net cost of uneconomic customers

The average revenue per uneconomic customer is to be set against the average avoidable cost of serving uneconomic customers. The sum of the losses for all uneconomic customers will correspond to the net cost of the uneconomic customers on economic islands.

A statistical analysis of access costs is critical for this evaluation. Where BTC is not able to provide the associated evidence for differing costs of customers connected, URCA may dismiss any claim that the USO imparts a net cost on BTC as a result of serving uneconomic customers in economic areas.

4. Net Cost of Special Tariffs to Specified Institutions

This Section sets out how BTC is to calculate the net cost of providing internet (dial-up) services for free to Specified Institutions (including Community Centres).

A Specified Institution using an internet (dial-up) service creates a de facto net cost of the USO for BTC. Absent this USO, BTC may choose to serve the Specified Institutions as it would be entitled to charge for the service – as long as Specified Institutions continue to be a subscriber of an access line.

This section speaks directly to the foregone revenue from providing USO to Specified Institutions. The avoidable costs associated with the actual connection of Specified Institutions are already taken into account in the determination of both economic and uneconomic islands.

4.1 Specified Institutions

URCA, in its Statement of Results and Final Decision [ECS 01/2013], reaffirmed the designated Specified institutions in Schedule 5(2)(e) of the Comms Act that are eligible to obtain access to USO services free of charge:

- All Public and church operated schools registered with the Ministry of Education;
- Public libraries registered with the Ministry of Education;
- Public hospitals and public medical clinics registered and/or operated by the Ministry of Health and/or the Public Hospital Authority;
- Senior citizens homes registered with the Residential Care Establishment Licensing Authority;
- Orphanages registered with the Residential Care Establishment Licensing Authority; and
- Community Centres (whose definition is provided in the Statement of Results);
- The College of The Bahamas;
- The Bahamas Technical and Vocational Institute;
- The Bahamas Hotel Training College; and
- Eugene Dupuch Law School.

4.2 Net cost of special tariffs

The net cost of special tariffs corresponds to the opportunity cost of providing dial-up internet services for free. It is given by the standard tariff monthly flat rate that the Specified Institutions would be charged absent the USO.

The estimated opportunity costs (i.e., revenues not earned) should then be adjusted to account for the possibility that faced with the standard tariff Specified Institutions would alter and reduce their usage of dial up internet services. This adjustment shall be carried out using a recognised price elasticity of demand for dial-up internet services that applies in the Bahamas context.

Table 3: Model to estimate the net cost of USO from Specific Institutions (all islands combined)

Revenue foregone (calculated as follows)
- Revenue from internet (dial up), prevailing internet minute charge rate (for all other subscribers) times calls/minutes
+ Adjusted for lower demand as services are charged at standard tariffs
= Net cost of serving internet (dial-up) for free to Specific Institutions

5. Net Cost of Public Pay Apparatus in Economic Islands

This section sets out how BTC is to calculate the net cost of providing public pay apparatus in public spaces in economic islands.

This calculation applies to the provision of public pay apparatus in economic islands only. This is because under the proposed methodology, costs and revenues from public pay apparatus in uneconomic islands are already accounted for in the calculation of the net cost of that island.

5.1 Public Pay Apparatus relevant for the net cost calculation

BTC must ensure that public pay telephones are provided to meet the reasonable needs of end-users in terms of geographical coverage, number of telephones, and the quality of services. Pay apparatus that are covered under the USO are those available on the street, and in other public areas available to the public at all times (i.e., unrestricted access).

BTC can include in its net cost calculation the net cost of the provision of USO public pay apparatus that have been agreed between URCA and BTC (and as recorded in BTC's USO Implementation Plan). The BTC USO Implementation Plan will set out both the rules that determine the number and possibly location of the public pay apparatus as required under the USO, and the actual provision of BTC against these targets on an annual basis.

Where BTC fulfil its obligations, then it can calculate the net cost of the USO, of which public pay apparatus are a component, for the purpose of preparing its application for compensation.

5.2 Level of analysis

The net cost of the USO public pay apparatus should be calculated on an island by island basis for the economic islands only⁸. Again this reflects the view that a new operator would choose to roll out the installation of public pay apparatus at island level.

5.3 Foregone revenues absent the USO

In an ideal situation, BTC should have information on the actual usage and revenues of public pay apparatus by island. Absent such information, BTC may use in order of preference (i) the average usage of a payphone on economic islands or (ii) the national average usage of a public pay apparatus. The number of public pay apparatus per economic island will be as stated in the Implementation Plan.

Other foregone revenue to account for will be that from selling advertising space on the public pay apparatus kiosks. As above, BTC should either and in an ideal situation use the

⁸ The net cost associated with the provision of public pay apparatus in uneconomic island is accounted for when BTC is to establish which island is economic as discussed in Section 2 of these guidelines.

specific amount of advertising revenue associated with each individual public pay apparatus or use a nationwide average advertising revenue.

5.4 Avoidable costs absent the USO

BTC will be expected to identify the network components and activities it would avoid absent of a USO on public pay apparatus.

Should the installation costs of a public pay apparatus vary across zones, it will be for BTC to provide the statistical analysis supporting the assumed differences in installation cost for each economic island.

5.5 Net avoidable costs

The net cost of the provision of public pay apparatus should be calculated for each economic island. It will be given by the difference between:

- The sum of all avoidable costs with the withdrawal of all public pay apparatus on the island; and
- The sum of the associated foregone revenues on that same island if the public pay apparatus service was withdrawn.

The overall net cost of providing public pay apparatus to economic islands will be given by the sum of the losses from public pay apparatus on all “economic” islands.

Table 4: Model to estimate the net cost of USO public pay apparatus on economic islands

Avoidable costs (calculated as follows)
+ Access cost, cost per line at the local exchange site
+ Communication costs, costs per call/minute times the relevant numbers of calls/minutes for each call type
+ Payphone-specific cost (maintenance, cleaning, coin collection etc)
Revenue foregone (calculated as follows)
- Revenues from outgoing calls, calls/minutes times unit price for each call type or average revenue per payphone on economic islands (only)
= Net cost of USO public pay apparatus on economic islands.

6. Adjustments to the Net Cost of the USO

This Section sets out the treatment of both the cost of capital and cost efficiency improvements in the net cost of the USO calculation.

6.1 Need to adjust for cost of capital

The cost of capital associated with the provision of the USO is a cost that could be avoided absent the USO. It therefore must be accounted for in the net cost calculation.

BTC is expected to set out whether the cost data used in the net cost calculation includes an allowance for the cost of capital.

To the extent that a measure of the net cost of the USO is calculated using avoidable cost data, the net cost would need to be augmented to account for the cost of capital for the provision of the USO.⁹ BTC is expected to first identify assets used for the provision of the USO and document to what extent these would be avoided absent the USO, and then estimate the avoidable cost of capital using the applicable weighted average cost of capital (WACC) as set by URCA for BTC from time to time.¹⁰

6.2 Need to adjust for cost efficiency

In its Statement of Results and Final Decision [ECS 01/2013], URCA concluded that where the net cost is estimated using actual cost data (as opposed to a bottom up model) URCA may, if it considers it appropriate make an efficiency adjustment to the estimate of the net cost of the USO based on any annual productivity gains the USP is set to achieve. URCA would therefore consider carefully the circumstances of each case to ascertain whether such efficiency adjustments to a calculated net cost of the USO would be necessary.

If an efficiency adjustment is deemed necessary, it will be applied once the direct net cost of the USO has been calculated.

URCA may use a number of approaches to determine the appropriate level of costs that would have been incurred by an efficient operator, in order to determine the quantum of adjustments necessary to the USP's net cost calculation. These methodologies may include, but are not limited to, the use of:

- The review of the business plan of BTC;
- Any indicators in relation to line faults¹¹;

⁹ For clarity, the inclusion of the cost of capital will increase the level of avoidable costs, and so islands marginally economic may become "uneconomic". Therefore a net cost of the USO accounting for the cost of capital is expected to be higher than a net cost of the USO without such an allowance all else equal.

¹⁰ In its accounting system, BTC has separate WACCs for fixed and mobile telephony respectively. The former is to be used.

¹¹ Quality targets in relation to maintenance and repairing lines are part of the operational definitions of the USO set out in the Implementation Plan of BTC.

- Independent survey report regarding the USP's efficiency;
- Regulatory decisions from other jurisdictions that provide relevant precedents and benchmarks.

Any efficiency adjustment will be applied ex-post to the overall net cost of the USO and be expressed as a percentage to be taken off the net cost estimate.

7. Intangible Benefits

This Section sets out how BTC should calculate the value of the intangible benefits arising from the provision of the USO.

Whilst the USP may face a direct net cost of the USO, this monetary amount does not capture the potential intangible benefits arising from the USO. Such benefits if they exist enhance the overall economic performance of the USP. Hence, URCA considers that the direct net cost of the USO should be netted off against the value of intangible benefits to obtain the overall net cost of the USO.

In its Statement of Results and Final Decision [ECS 01/2013], URCA reaffirmed that in principle, the calculation of the net cost of the USO should be adjusted to account for intangible benefits. Whilst a number of intangible benefits arising from the USO have been identified in the literature and regulatory decisions in other jurisdictions, URCA has identified four intangible benefits that it considers to be pertinent in the context of The Bahamas. These include

- Enhanced Brand Recognition/Corporate Reputation;
- Ubiquity;
- Life Cycle Effect; and
- Marketing.

In quantifying these, BTC should seek to answer the question as to what are the intangible benefits from serving unprofitable customers/islands at subsidised prices, rather than charging them at a price that reflects their true cost (and risk pricing them off the network).

7.1 Enhanced brand value

The brand image of BTC is drawn in part from the fact that BTC provides universal services: it implants public pay apparatus throughout the country; and provides telephony services to anyone upon request. From this fact, BTC may enjoy a better brand image and draw an advantage from it.

Related to brand value is the notion of brand recognition.

Core approach

Based upon data availability and computational ease, URCA proposes that for the time being the intangible benefit to BTC's brand image be estimated as 10% of the BTC's advertising and marketing spent on retail activities¹².

¹² The 10% value as stated by URCA in ECS 12/2012 is reflective of the degree of corporate goodwill and brand appeal of the USP in the Bahamian communications market.

The premise behind this approach is that BTC value and is prepared to spend resources to establish and/or maintain its brand. By providing a universal service, BTC's brand is enhanced. This will increase the likelihood of customers choosing BTC over competitors for non-USO services.

The amount BTC is willing to spend to maintain its brand reveals the minimum return it hopes to achieve from its brand. In these guidelines the advertising spent on retail activities is to be assumed a lower bound value of the brand (provided the USP's marketing is effective in at least maintaining its brand value at this level). In recognition that not all its brand might be attributable to the USO, URCA proposes to estimate this intangible as a 10% of the advertising/marketing budget of BTC.

7.2 Ubiquity

Ubiquity benefits refer to the fact that some customers who move from an area where they were served only as a result of the USO to an economic area to serve are more likely to stay with the operator, in this instance BTC, who served them in the high cost area than would otherwise be the case.¹³⁻¹⁴ Ubiquity is deemed as a benefit in that as a result of this BTC faces lower acquisition costs for these customers than its rivals. The USO status makes BTC more attractive to these moving customers.

In order to capture the ubiquity benefits arising from this behaviour, BTC should estimate a per line net contribution to profits that BTC may expect to earn as customers migrate from high cost to low cost areas. In this context, the high and low cost areas shall refer to the uneconomic and economic islands.

For example this could be done by calculating the product of (A x B x C) below:

- The number of BTC customers in an uneconomic island moving to another, albeit economic, island (A);
- The probability that a BTC customer from the uneconomic area is likely to reconnect to BTC rather than choosing another provider on an economic island (B);
- The difference in margins of providing the same communications in an economic and uneconomic island (C).

¹³ Ubiquity and life cycle effects are related. The former is about current migration from a high cost to a low cost island for a customer at a given cycle of his/her life. The latter is about the evolution of revenue spent on communications services as a customer that evolves through different cycles of his/her life. Broadly speaking, the former is about increasing contribution per line thanks to lower costs; the latter about increasing contribution per line thanks to higher revenues.

¹⁴ For simplicity reasons URCA does not propose at this stage that another type of ubiquity benefits be evaluated. This other ubiquity benefit would seek to capture the fact that some customers may have requirements that cover multiple sites and prefer an operator who is present in all locations – which happens to be the case for a USP by virtue of its USO.

Two conditions are therefore necessary for the ubiquity benefit to materialise. First, the customers need to migrate from uneconomic to economic islands, and second, customers choose the USP as a result of having been served by it previously.

The first variable may be derived according to the number of subscribers who cancelled their lines because they are moving location adjusted for the proportion of general population moving from uneconomic to economic islands.¹⁵

This would then be adjusted to derive an estimate of the propensity of customers to choose the same operator as before. Absent these statistics, the market share of BTC in the economic island may be used as a proxy.¹⁶

Regarding the third variable, the initial exercise of identifying the economic and uneconomic islands will provide information on the average revenue and average cost per island. BTC should then compare the average margin contribution for each uneconomic island with the higher margin contribution in the economic island.

7.3 Lifecycle benefits

Lifecycle benefits refer to the fact that some customers may become more profitable in the future and when considering this lifelong perspective, such customers may become economically viable customers. As a result, absent the USO, BTC would choose to serve some customers at an initial loss in the expectation that these customers would turn profitable over time. This phenomenon is deemed as a potential benefit for BTC insofar as such customers remain loyal to BTC once they have become profitable.

Two conditions are therefore necessary for the lifecycle benefits to materialise. First, BTC must identify the customers who are currently unprofitable but who generate a positive Net Present Value (NPV) over their lifetime. Second, the expected NPV of these customers must be greater if services are being provided whilst the customer is unprofitable (as a result of customers increased propensity to stay with BTC).

URCA considers that this benefit is already captured in the estimated net cost of the USO. This is because the lifecycle benefits, if they exist, are largely accounted for as the analysis is carried out at island level. For the uneconomic customers in economic islands, their average revenue is assumed to match the average revenues of all customers. This latter average revenues is based on the consumption of communication services by the mix of all customers – and therefore at different stages of their lives.

¹⁵ For example, if 1,000 customers have cancelled their subscriptions to BTC because of a change of address. National Statistics indicate that 0.3% of population that migrate, migrate to a more prosperous island, then at best $0.3\% * 1,000$ customers would be assumed to have moved to economic islands.

¹⁶ The proxy says that if BTC holds a market share of 70% on a given island, 7 out of any 10 customers would choose BTC as they move to this island. URCA recognises that this proxy is not perfect. The implicit assumption would be that new customers on an economic island would have this (market share) propensity to stick to the USP because of its USP status. Other reasons than the USP status might explain why customers choose the same operator as before.

Therefore, URCA concludes that this benefit should not be considered in the determination of the net cost of the USO under the approach proposed in these guidelines (as initially envisaged in the Statement of Results and Final Decision [ECS 01/2013]).

7.4 Marketing

Marketing benefits refer to the potential use and/or commercialisation of customer usage data (in terms of usage and profile of service mix for example).¹⁷

The customers on whom data may be valuable are the customers in uneconomic islands. This dataset is deemed a USO benefit for BTC insofar as BTC is the single and unique provider to uneconomic island (i.e. absent the USO, no profit maximising operator would choose to serve this market). Hence this information has a value for future operators should they wish to market themselves to these customers/islands as they become economic and justify entry in the market.

The value of this knowledge base does not go beyond the cost savings BTC may make in consumer research. The commercialisation of consumer data to a third party is not allowed under data protection law in the Bahamas¹⁸. The former cost saving can be expected to be small whereas the second could have been large.

On this basis, URCA concludes that this benefit should not be considered in the determination of the net cost of the USO under the approach proposed in these guidelines (as initially envisaged in the Statement of Results and Final Decision [ECS 01/2013]).

¹⁷ In this approach, the benefits arising from the possibility of selling advertising space on public payphone are accounted for in the net cost of the USO payphone in economic islands.

¹⁸ Both the Data Protection (Privacy of Personal Information) Act, 2003 and Condition 25.6 of BTC's Individual Operating Licence (IOL) suggest that there are restrictions in reselling customer information to third parties, unless the data is collected specifically by the licensee for the purposes of commercialization and the licensee has actively obtained the customer's consent to disclosing the customer's personal information to third parties (for the purposes of the customer receiving unsolicited communications from such third parties).

8. Beyond the Net Cost Calculation: Next Steps

8.1 Format of application

As previously stated in Section 1 of this document, URCA's proposed process will enable BTC to make its own estimate of the net cost of the USO with and without intangibles and the net cost for the components of the USO.¹⁹

These overall figures must be presented to URCA with evidential support and the underpinning assumptions together with a description of the approach followed by BTC. The spreadsheet model is also to be provided.

URCA accepts that BTC may adopt slightly different approaches in implementation to those suggested in these guidelines because of data availability or technical requirements. However BTC must ensure that its approaches are consistent with the principles set out in the guidelines. The quality of BTC's documentation will be key for URCA's assessment of the robustness of these estimates. URCA may at any stage of the process request further clarification if the information provided is deemed insufficient in scope and quality. BTC may also be required to take part in meetings with URCA to provide clarification or further information in relation to its submissions.

8.2 Timing

An application for compensation for the net cost of the USO is to be submitted within six months of URCA approving BTC's separated accounts for that year or the publication of its financial audited accounts if separated accounts are not required under the prevailing regulations.

8.3 Unfair financial burden

In the event that having completed its assessment of BTC's submission URCA accepts the estimate of the net cost of the USO (inclusive of intangible benefits), URCA will then consider BTC's assessment of whether the net cost of the USO constitutes an unfair financial burden upon BTC. For the avoidance of doubt, URCA will undertake its own analysis of unfair burden where necessary and appropriate.

URCA will employ a two stage approach to the possible determination of an unfair financial burden. The first stage relates to the market share threshold at which URCA will commit to undertake an analysis of whether an unfair financial burden exists.

¹⁹Uneconomic islands; uneconomic customers; public pay apparatus in economic islands, special tariff for Specific Institutions.

The second stage is the actual analysis of unfair burden and the approach discussed below.

The market share threshold for the determination of an unfair burden will be set at 80%. Where the USP's market share is 80% and greater, the presumption is that no unfair burden exists. The USP would have to demonstrate that it faces an unfair burden whilst having a market share of 80% and above.

Where the USP's market share is less than 80%, URCA will assess whether an unfair burden exists. This analysis will take place if the net cost of the USO is not disproportionate to the administrative cost of running a universal service fund (USF). If so, URCA will look at a number of indicators.

First the impact of a USO can, in principle, undermine the profitability of a USP or endanger its financial viability. It is relevant and necessary, therefore, to take into account whether or not a positive net cost significantly affects BTC's profitability and/or ability to earn a fair rate of return on its capital employed in the prevailing market circumstances. URCA will therefore consider how and to what extent BTC is able to achieve a fair rate of return on capital employed (ROCE) across all its licensed activities.

Profitability can indicate a USP's ability to bear a USO in the short term. However, a static view of a USP's revenues and profitability may only provide a weak indicator of a USP's ability to continue paying cross-subsidy revenues into the future. In this regard, an assessment of a number of dynamic and somewhat interdependent criteria can also inform the USP's ability to sustain a USO positive net cost. Among these, URCA will consider the following criteria:

- changes in prices over time;
- changes in market share and/or changes in related markets; and
- market entry barriers.

BTC is expected to produce its own assessment against these various criteria.