Final Document

# Current Cost Accounting Reference Paper

Includes Guidelines to concessionaires for the submission of data required for the CCA studies

October 23rd 2012 TATT 3/5/3/2

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|---|---|---|
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| October 23, 2012 | Updated version, incorporates amendments and additions required due to implementation decisions made in the 2011 CCA studies. | 1.1 |

# Table of Content

# Table of Contents

# 1.0 Overview

This reference paper is designed to provide practical guidelines to assist the fixed, mobile and hybrid network operators in producing cost inputs for the LRAIC models on a current cost accounting (CCA) basis.

The rest of this section is structured as follows:

- summary of the approach to modelling and the need for CCA cost inputs;
- discussion of the modelling process and the role of concessionaires;
- description of the data collection process; and
- a high level description of the main steps involved in calculating CCA costs.

The rest of this reference paper contains a detailed description of the main steps involved in calculating CCA costs. In addition, there are a number of annexes which set out:

- a glossary of the abbreviations used in this reference paper;
- a description of the 'roll forwards' and 'ratio' methods which provide an approximation of CCA depreciation in the cases where CCA depreciation cannot be directly estimated;
- categorisation of assets for different types of networks (fixed, mobile, wireless broadband and cable);
- a summary of the recommendations received from concessionaires in response to the first and second rounds of consultation and the Authority's decisions on these recommendations.

## 1.1 Approach to LRAIC modelling

The Costing Methodology[1] specifies the development of a top-down LRAIC model of fixed, mobile and hybrid networks in Trinidad and Tobago. This model, in conjunction with the Accounting Separation framework[2] also being developed by the Authority, will be used for a range of regulatory purposes, which may include but are not limited to:

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1 "The costing methodology for the communications sector", TATT, 29 May 2008

2 *Accounting Separation Guidelines for the Telecommunications Sector* (version 1.1, February 2012) prepared by the Authority

- "the determination of interconnection rates for all concessionaires when required;
- the determination of rates for accessing the facilities (e.g. unbundled local loops) of any concessionaire when required;
- the determination of rates, where necessary, for any telecommunications service in which there is a monopoly or exclusive provider (un-contested market);
- the determination of rates, where necessary, for any public telecommunications service provided by a dominant provider in a contested market; or
- any exercise by the Authority to detect unfair cross subsidies or any act of anti-competitive pricing."[3]

The LRAIC model produces a range of outputs including costs for individual services and network infrastructure costs. It has been constructed on a top-down basis, that is, the model is based on the network structures of the concessionaires and uses cost information provided by them. These are then adjusted to reflect any inefficiency that has been identified in the existing networks[4].

To ensure that regulated charges are in line with the current market environment and concessionaires' cost structures, the LRAIC modelling process, and thus the CCA studies, will require regular updating going forward. Concessionaires are required to submit up-to-date input data for each update. Within each revision, the Authority will firstly update the CCA studies for each concessionaire which will then form an input to the LRAIC modelling process.

## 1.2 Need for CCA

Since the outputs of the model will be used to determine the efficient level of prices, where necessary, the Costing Methodology requires that the cost models should be based on CCA. Under CCA, charges related to fixed assets are based on the capital expenditure that would be incurred if an operator were to roll out a network today. Prices set on the basis of CCA place the incumbent and new entrant on a level footing and provide the correct signals for entry to the market. As a result, interconnection and access charges determined using CCA asset

[3] Source: Section 1.1.4 of the Costing Methodology

[4] The Methodology for an Efficiency Study, May 9th 2011 TATT 2/3/30

values provide new entrants with appropriate 'build or buy' signals as to whether to deploy competing network infrastructure or purchase interconnection and access services from existing operators. Therefore, CCA is considered to be a more appropriate accounting convention than historic cost accounting (HCA) for the determination of regulated charges.

## 1.3 Differences between CCA and HCA

Statutory accounts are generally produced under the historic cost accounting convention with depreciation and the valuation of assets based on the cost of the asset at the time they were acquired. Under HCA, the valuation of assets is based on the acquisition cost of assets with gross book value (GBV) being equal to this cost. The valuation of the assets in the balance sheet; net book value (NBV), is calculated as gross book value less accumulated depreciation and amortisation. However, the current cost of similar assets may differ from historical acquisition costs because of general inflation in the economy, asset-specific inflation (such as increasing copper prices resulting from increased global demand for copper) and technological change. Under CCA, depreciation over an accounting period and the valuation of assets at a point in time are based on the cost of replacing assets with similar assets at that point in time. Under CCA gross replacement cost (GRC) refers to the cost of replacing an asset at a specific point in time and net replacement cost (NRC) refers to the valuation of the asset taking account of depreciation and amortisation.

The difference between asset valuations and capital charges under CCA and HCA will depend on a combination of a number of factors, in particular:

- asset price trends;
- the age of the assets; and
- any changes made to asset lifetimes reflecting current engineering and economic reality rather than accounting rules estimated when the asset was purchased.

## 1.4 Need for operator input

Given that the LRAIC model has been constructed on a top-down basis using the costs of the networks and associated assets of concessionaires, concessionaires are required to submit data relating to both operating costs and capital costs. A high level view of the data required is set out below. Data

provided by concessionaires for the purposes of this study will be treated as confidential and will not be made available to other concessionaires.

### 1.4.1 Capital costs

Concessionaires will need to provide sufficient data so that the Authority is able to calculate CCA based cost estimates for all their fixed assets used for the provision of fixed and mobile telecommunications services in Trinidad and Tobago. The role of concessionaires will be fundamental to ensure that the model inputs, and therefore the model results and any regulatory decisions based on the results, reflect the operating environment faced by concessionaires in Trinidad and Tobago.

The model requires asset valuations (including installation costs and import duties) and the associated depreciation and amortisation charges to be calculated on a CCA basis. Therefore, operators will need to provide sufficient data in order for the Authority to be able to revalue the relevant assets. The purpose of this reference paper is to describe the data required and how this will be used by the Authority.

The role of operators in the data preparation process and the timeline for the process is set out in further detail in Section 1.5 below.

***Statement on Capital Cost:***

*The Authority requires that all concessionaires[5] provide sufficient data in order for the Authority to be able to calculate CCA based cost estimates for all fixed assets used in the provision of fixed and mobile telecommunication services in Trinidad and Tobago.*

### 1.4.2 Operating costs

Concessionaires will also need to take operating costs from their financial systems (general ledger) and categorise them into the appropriate cost categories. However this will be a categorisation exercise with no change in the reported level of costs.

***Statement on Operating Cost:***

*The Authority requires that all concessionaires categorize their financial systems (general ledger) into the required cost categories established by the Authority.*

[5] The word 'concessionaires' refers to those service providers with a type 1 and/or 2 concessions.

## 1.5 Overview of the LRAIC modelling process and the CCA revaluation study

To ensure that regulated charges are in line with the current market environment and concessionaires' cost structures, the LRAIC modelling process, and thus the CCA studies, will require regular and annual updating. Concessionaires are required to submit up-to-date input data for each update.

Within each revision, the Authority will firstly update the CCA studies for each concessionaire which will then form an input to the LRAIC modelling process.

These current versions of the LRAIC Specification Paper and CCA Reference Paper reflect the Authority's position. However, if required, the Authority may publish revised versions of either of these document(s), in line with any changes to the overall market environment or other developments.

### 1.5.1 CCA revaluation study

The table below provides an overview of the CCA revaluation study showing the roles of the Authority and the concessionaires at each stage and the anticipated timeline for each stage.

**Table 1.** Overview of the data collection process

| Stage | Role of the Authority | Role of concessionaire | Timeline |
|---|---|---|---|
| **Issue of detailed data request** | Issue data request and CCA reference paper that sets out the requirements for the CCA study and reflects the level of data available, the time scale for data collection and the LRAIC model requirements | Seek clarification on any aspects of the data request not fully understood | **2 weeks** |

| | | | |
|---|---|---|---|
| **Submission of CCA input data** | Review CCA data as it is submitted<br>Request clarification of data submitted where necessary<br>Provide clarification of data requested as required by operators<br>Assist operators in methodological issues and identifying potential data sources | Submit data as it becomes available and before the deadline for data submission<br>Provide clarification/validation of data requested as required within a reasonable time period. | **6 weeks** |
| **Submission of final version of CCA data** | | Submit final version of CCA data and full documentation of methodology, sources and results | **5 weeks** |
| **Data submitted used to calculate CCA inputs and inputted into LRAIC model** | Use data to calculate CCA costs and input data into LRAIC model and sense check the outputs | Provide clarification where necessary | **5 weeks** |

As set out in the table above, the data collection process will start with a detailed data request being issued which consists of an Excel data template and detailed written guidelines on how to prepare data for the study.

Concessionaires will then be required to submit the relevant cost and revaluation data to the Authority.

Concessionaires are encouraged to submit data as it becomes available and to seek clarification from the Authority as and when queries arise. The Authority's staff will be available to concessionaires throughout the data collection process to assist with queries relating to the data collection that concessionaires may have.

The data collection process is an iterative process and it is envisaged that concessionaires will need to work closely with the Authority in order to prepare the requested data. Therefore, if further clarification is required with respect to the data requested and the data collection process, concessionaires should

contact the Authority as queries arise rather than waiting until the final deadline for submissions.

## 1.6 Relationship between CCA study and accounting separation

Under the *Accounting Separation Guidelines for the Telecommunications Sector* prepared by the Authority (the "AS guidelines"), operators providing two or more services are required to submit separated accounts on an annual basis. These separated accounts must be prepared in accordance with these guidelines and the *Costing Methodology for the Telecommunications Sector* (hereafter referred to as the "Costing Methodology") produced by the Authority.. Both of these documents have been subject to public consultation and reflect the Authority's decisions on the recommendations made by concessionaires.

In the AS guidelines, the Authority outlines that separated accounts will be used to determine the presence of any anti-competitive cross-subsidies between services provided by a concessionaire or the presence of any other form of anti-competitive pricing. The Authority also states that accounting separation will assist in ensuring that "charges for telecommunications services are cost-based, transparent and non-discriminatory". As outlined in Section 1.2, the use of CCA helps to put concessionaires on a level footing regardless of when they rolled out their networks.

***Statement on Accounting Separation and CCA:***

*The Authority requires that all concessionaires, providing two or more services, submit separated accounts on an annual basis using the CCA methodology.*

## 1.7 Calculating CCA asset values and charges

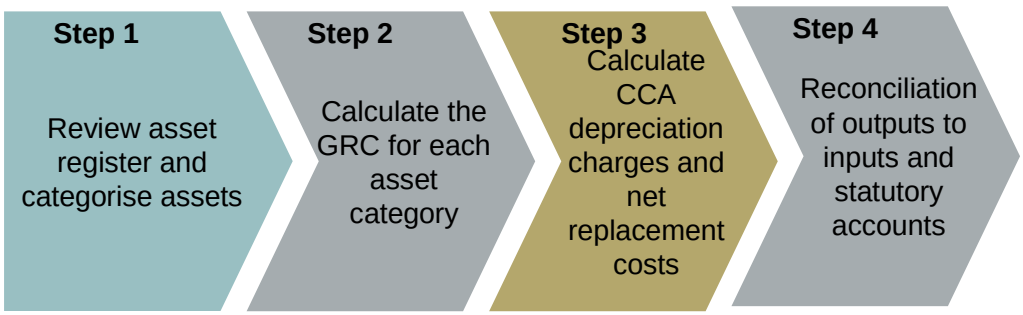
The outputs of the CCA process are the opening and closing valuation of the assets on a CCA basis along with depreciation and amortisation charges relating to the assets on a CCA basis.[6] These charges will need to be calculated for each accounting period for which the LRAIC model is run. Where there is a change in the price of an asset over the course of a financial year, the revaluation of that asset class will lead either to a holding gain (in the event of a price increase) or a

[6] Depreciation relates to the cost recovery of tangible assets whereas amortisation relates to the cost recovery of intangible assets (such as licence fees).

holding loss (in the event of a price decrease) which should also be reported. This is discussed further in Section 4.1.3.

The implementation of CCA can be divided into four main steps. These are illustrated in Figure 1 and then described briefly below. Each step is then discussed in detail in the following sections of this reference paper.

**Figure 1.** CCA calculation




### *Step 1: review of asset register and categorisation of assets*

As the first step in the CCA study, each concessionaire will need to review its fixed asset register (FAR) and to map its assets into a set of asset categories. The concessionaires will then need to review the characteristics of each asset category to identify the approach that should be used to revalue each of the asset classes. Guidance on the categorisation of assets and the revaluation approach for each is provided in the Annexes to this reference paper.

The Costing Methodology indicates that indexation is the preferred revaluation method for all asset categories. However, in exceptional cases there may be some asset categories where accurate price indices are not available and cannot be constructed (for example, if an asset is no longer available to purchase because it has been replaced by new technology). Under these circumstances, it may be more appropriate to use a modern equivalent asset (MEA) approach or a direct valuation approach. In other cases for reasons of practicality and materiality, the use of historic prices may be appropriate for smaller asset classes or where assets are relatively new or where asset prices are not expected to have changed significantly since the assets were purchased. Section 2 describes the valuation methodologies in more detail. Annexe 3 sets out the asset categories for each type of network operator, the valuation methodologies which should be used for each asset category and potential data sources.

### *Step 2: calculation of gross replacement cost*

For each asset category where indexation is applied, the concessionaire will need to apply the necessary pricing indices to the time series of acquisition costs of assets (GBV) to calculate GRC. In the event that a direct or MEA approach is adopted the concessionaire will need to collect information on current replacement cost and the volume of assets. Section 3.0 describes this step in more detail.

### *Step 3: calculation of CCA depreciation charges and NRC*

The third step will be to calculate CCA depreciation charges and NRC based on the GRC calculated. Section 4 describes this step in more detail.

### *Step 4: reconciliation of outputs to inputs*

The final step of the study will be to ensure the consistency of the study outputs with the study inputs. It will also be important to understand the source of any large differences in HCA depreciation and CCA depreciation. Section 5 describes the reconciliation process in more detail.

# 2.0 Step one: categorise assets and choose valuation method

As a first step, it will be necessary for concessionaires to review their asset registers and map the categorisation used in the asset register into the defined asset categories for the LRAIC model.

In order to be able to revalue network assets and determine CCA depreciation, it is important that the asset classes are relatively homogeneous in terms of:

- asset life; and
- rate of price and technological change.

In addition, certain groups of assets need to be separately identified in order for the LRAIC models to accurately model the relationship between costs and demand.

## 2.1 Categorisation of assets

Concessionaires will need to categorise fixed assets into one of four main discrete headings:

- mobile network assets;
- fixed network assets;
- network infrastructure assets; and
- non-network (support) assets.

In some cases assets may be excluded from the calculation of LRAIC costs and these assets should be identified at this stage.

### 2.1.1 Mobile network assets

Mobile network assets are the assets that are directly used in the provision of mobile communications in Trinidad and Tobago. Within this category, concessionaires will need to separately distinguish costs of network elements and this will require the further categorisation of assets. This categorisation will be determined by the underlying network structure. The Annexes to this reference paper set out categorisations for mobile network related equipment based on the data provided by the concessionaires during previous CCA studies and the categories set out in the *Accounting Separation Guidelines for the Telecommunications Sector* prepared by the Authority.

***Statement on Mobile network assets:***

*The Authority requires that all concessionaires operating a mobile network to provide the requested data in order for the Authority to be able to calculate CCA based cost estimates for all their fixed assets used in the provision of mobile telecommunications services in Trinidad and Tobago. These fixed assets must be submitted in the cost categories established by the Authority for each network.*

### 2.1.2 Fixed network assets

Fixed network assets are the assets that are directly used in the provision of either fixed wire-line or fixed wireless communications in Trinidad and Tobago. Within this category, concessionaires will need to separately distinguish costs of network elements and this will require the further categorisation of assets. This categorisation will be determined by the underlying network structure. The Annexes to this reference paper set out categorisations for fixed wire-line and fixed wireless network related equipment based on the data provided by the concessionaires during previous CCA studies and the categories set out in the *Accounting Separation Guidelines for the Telecommunications Sector* prepared by the Authority.

***Statement on Network Assets:***

*The Authority requires that all concessionaires operating a fixed wire-line or fixed wireless network to provide the requested data in order for the Authority to be able to calculate CCA based cost estimates for all their fixed assets used in the provision of fixed voice and data services in Trinidad and Tobago. These fixed assets must be submitted in the cost categories established by the Authority for each network.*

### 2.1.3 Network infrastructure assets

In addition to the fixed wire-line, fixed wireless or mobile specific assets, concessionaires will further employ infrastructure assets which are common across different network technologies, including, amongst others:

- network buildings;
- network land;
- duct ; and
- power equipment.

As these assets will also be valued on a current cost basis within the LRAIC model, concessionaires are required to provide the required CCA input data for these assets to the Authority.

***Statement on Network Infrastructure Assets:***

*The Authority requires that all concessionaires provide the requested data in order for the Authority to calculate CCA based cost estimates for network infrastructure equipment used in the provision of fixed and/or mobile telecommunications services.*

### 2.1.4 Non-network assets

It should be noted that the use of current cost accounting should not be limited to the network assets only, but that all the fixed assets of the concessionaires should be valued at current cost basis. Concessionaires are required to provide CCA revaluation of non-network equipment (that is, assets used in the provision of fixed and/or mobile telecommunications services in Trinidad and Tobago but not forming part of the network related activities). Such equipment includes, at a minimum:

- vehicles;
- furniture and office equipment;
- billing systems;
- non-network land; and
- non-network buildings.

***Statement on Non-network Assets:*** *The Authority requires that all concessionaires provide the requested data in order for the Authority to calculate CCA based cost estimates for non-network assets used in the provision of fixed and/or mobile telecommunications services*

### 2.1.5 Cost exclusions

The LRAIC models should reflect the forward looking costs that are efficiently incurred in the provision of fixed and mobile communications services. To reflect this, the Costing Methodology sets out a number of costs that may or may not be included in the calculation of costs, such as:

- stranded assets; and
- fully depreciated assets.

In determining whether or not stranded assets should be included in the LRAIC cost basis, the Authority will be mindful of efficiency considerations. In

particular, the underlying purpose of LRAIC modelling is to determine the costs that would be incurred by an efficient operator on a forward looking basis. The Authority has conducted a separate efficiency study of concessionaires which has reviewed the need for efficiency adjustments to be applied to LRAIC results for each concessionaire when setting cost oriented regulated prices.

Fully depreciated assets should be excluded from the cost base. Including fully depreciated assets in the cost base would lead to the over-recovery of costs by concessionaires. While it could be argued that the exclusion of fully depreciation assets results in the capital costs for that asset not being a reasonable proxy to the economic cost of that asset, the aim of the CCA methodology is to proxy economic cost for the asset base as a whole. In this case, where the assumed asset life is a reasonable approximation to the average economic life of the assets, the zero capital charges for assets which remain in operation past their assumed asset life are offset by charges for retirements for assets which are removed from service before the end of the assumed life.

Concessionaires will be required to provide data on the costs excluded, on an HCA basis, to allow for the reconciliation of the CCA outputs with the statutory accounts (see Section 1.0).

***Statement on Cost Exclusions:***

*The Authority shall exclude all costs that contravene the principles outlined in the Costing Methodology. The Authority shall therefore exclude the costs associated with stranded assets and fully depreciated assets*

## 2.2 Revaluation methods

There are four main approaches to revaluing assets on a current cost basis:

- indexation;
- direct (absolute) valuation;
- modern equivalent asset (MEA) valuation; and
- HCA as a proxy for CCA.

The Costing Methodology provided by the Authority states that the indexation method is the required approach. However, there may be particular asset classes where a reliable price index is not available and cannot be constructed and alternative approaches may be more appropriate. The specific circumstances under which this may occur are set out in more detail below. The rest of this

section describes each of the revaluation approaches in more detail. Annexe 3 sets out the revaluation approaches that should be used for each asset category unless concessionaires can provide sufficient evidence that alternative approaches are more appropriate.

### 2.2.1 Indexation

Under indexation, GRC is calculated by applying a factor to the GBV of additions in each year that reflects the change in the price index from the date the asset was acquired until the current year.[7] The CCA valuation is thus directly linked to the acquisition cost value that is recorded in the FAR. This link ensures that all relevant costs are included in the valuation. As a result, detailed information on the quantity and specification of assets is not required.

There are a number of options for the choice of index, as outlined in the table below. Annexe 3 sets out the recommended data source for indices for each asset category.

[7] Only additions that have not been fully depreciated are included in the calculation of GRC under indexation.

**Table 2.** Types of indices

| Index type | Description |
|---|---|
| **Internal asset specific** | Based on price information collected over time by the operator. This approach would ensure that the index accurately reflects the actual prices faced by the operator. However, such an index requires the availability of information on prices paid or accurate price quotes over the lifetime of the assets, which in turn requires that the operator has purchased the equipment on a consistent basis and that this cost information has been kept. |
| **External asset specific** | An index is constructed and updated by third parties. An external price index would provide a trend for equipment prices but may not fully take account of operator-specific factors, such as the level of supplier discounts offered to individual operators and the use of multiple-year framework agreements. |
| **General price inflation** | In the absence of a suitable asset specific price index, a more general index may be used, for example as produced by the Central Statistics Office. Whilst this may not capture asset specific price trends, it may capture more general economy wide trends where it is believed that this may be a good proxy for input cost changes (such as labour costs). |

*Source: Frontier Economics*

Where an asset class includes a number of different cost elements, for example labour and material costs, a separate index should be used to revalue each component (or a weighted average of two or more indices may be used). This may be particularly important for asset classes that include a large element of labour costs – which are likely to have risen since the asset was put in place – and also equipment costs, which may not have increased in line with labour costs.

Although an indexation approach does not require detailed quantity and price information, it does require information from the FAR on:

- the age profile of all assets within a given asset class (typically shown as GBV by year of acquisition); and
- a split between individual cost elements (labour and materials) of the GBV of additions for each year.

Indexation is appropriate for assets where there has been little technological change and all direct costs that have been incurred and capitalised to date would

have to be incurred if the asset were replaced today. Indexation may also be used for groups of assets where the assets within that group share similar characteristics in terms of technological change and price trends.

Applying an index to the total cost of an asset may be justified where no reliable data is available on the split of equipment and labour costs. However, concessionaires would need to provide sufficient evidence that this is the case. The Authority may recommend a split between equipment and labour costs based on international and local benchmark data.

### 2.2.2 Direct approach

While indexation should be the default approach, there may be particular asset classes where a reliable price index cannot be found or constructed. In this case a direct valuation approach may be appropriate.

For asset categories requiring valuation using a direct approach, concessionaires will need to collect data on the unit cost of replacing the asset at the valuation date. This means that concessionaires will also need information on the quantity of assets included their FAR. Under the direct approach, GRC is calculated simply by multiplying the quantity of assets by the unit replacement cost per asset. However, there are three main disadvantages of the direct valuation approach which are described in more detail below.

First, in order to adopt this approach, concessionaires will need robust sources of information on the quantity of assets in the FAR, typically derived from other sources such as engineering databases. While this may be possible for some concessionaires and for some asset categories, this is not always the case. Robust information on the quantity of assets is typically available for those assets which are relatively small in number and discrete. Thus for example concessionaires operating cellular networks could expect to have reliable information on the number of base stations in the network and the configuration of each of these base stations (for example, the number of sectors and transponders). For other assets such as a network of ducts, it is far more difficult to define measures of quantity that effectively summarise the network dimension and typically information on the network dimension is not readily available. For these asset classes a direct approach may not be feasible or would require excessive additional resources to implement.

Second, the direct approach relies on price information being available for all of the elements being valued. This may be problematic for assets that are not purchased on a regular basis or are no longer available for purchase. While some assets will continue to be purchased over the lifetime of a network, (for example additional cellular transponders to serve incremental demand), other assets (such as MSCs), may only be purchased during the initial roll out of the network. While concessionaries could seek price quotes from suppliers for the purpose of the CCA valuation, price quotes made outside of a commercial negotiation may

not truly reflect the replacement cost of assets. In the case of obsolete equipment that can no longer be purchased new, there will be no price information available.

Third, the direct valuation is typically not based on information drawn from the concessionaire's FAR but from independent sources such as engineering databases. This means that there is no direct link between the resulting valuation and the FAR. Any deficiencies or inconsistencies in these external databases or the inclusion of assets that should be excluded such as fully depreciated assets could flow through the resulting CCA estimates.

Despite these disadvantages in some cases a direct valuation may result in a more robust valuation than applying an indexation approach.

### 2.2.3 MEA revaluation

For a number of network elements in a telecommunications network, neither an indexation approach nor a direct approach may be appropriate for a particular asset in service. In particular indexation or direct valuation may not be appropriate where:

- the asset is no longer available for purchase from network equipment vendors; or
- the asset no longer represent the technology that would be used in network deployment by a new entrant.

In the first case it is not possible to revalue individual assets using alternative approaches as the necessary price information will not exist either to construct a price index or to carry out a direct valuation. In the second case, whilst it may still be possible to estimate the replacement costs of the assets, such an approach would not yield an accurate estimate of the cost for the operator concerned of replacing its network today, as the operator in question would in the circumstance use alternative (modern) technology instead.

When revaluing an asset that falls in either of these categories the GRC should be based on an estimate the value of an MEA. Such a valuation would be conducted using both quantity and price information for each asset. However, the quantity should reflect the number of modern equivalent assets that would be required to replace the existing asset, with the price information reflecting the pricing of the MEA. Again, this valuation should include not only the price of materials and equipment but also any other costs that are included in the GBV of the asset in the FAR and which still apply to the MEA.

In comparison to the assets currently in service, the MEA might exhibit additional features and/or functionality. In such cases, it may be appropriate for the asset valuation to attempt to discount the value of this additional

functionality from the estimated current value of the MEA. While such an approach may ensure that only the functionality required for providing a given set of services is included in the cost base, it requires information on the value/cost attributed to the increased functionality. Such information, for example, comparing the price of the MEA both with and without the increased functionality over the existing asset may however not be available.

Similarly, the use of modern equivalent assets may also reduce the operating (maintenance) costs associated with the existing asset. In such cases it may also be appropriate to make an operating cost adjustment within the costing model to reflect this cost saving.

In fixed telecommunications, MEA valuations have been used to revalue any remaining analogue switch equipment as digital switch equipment and PDH transmission equipment as SDH transmission equipment.

In some cases, the rate at which modern assets can be introduced to the network is limited by practical constraints (such as the time taken to install capacity and lead times). Therefore, using an MEA valuation does not fully reflect costs efficiently incurred. In the UK, this issue is resolved by only using the MEA approach where BT has "definitive plans" to replace these assets, that is, within the next three years.[8] Similarly, Eircom in Ireland outlines that it follows "best practice" by looking at the mix of technology that is likely to be in place in three years' time.[9] It is recommended that this approach should also be applied in Trinidad and Tobago.

The operating costs associated with MEA may vary significantly from those associated with historic assets. While in theory, it may therefore be desirable to estimate operating costs on a CCA basis, this is rarely applied in practice due to the resource costs of implementing such an approach, the likely inaccuracy of any resulting adjustments and the limited impact on overall results.

### 2.2.4 Proxying CCA with HCA

While in theory all asset categories should be revalued, in practice, for some asset categories revaluation would not materially affect the results of the LRAIC model Requiring the calculation CCA valuations for these assets may place an undue burden on the concessionaires. Thus revaluations of every single asset category will not be required and HCA valuations may provide a suitable proxy. However this should be the exception and the network and related asset groups that make up the majority of an operator's asset base should be revalued.

[8] Source: Detailed valuation methodology, BT

[9] Source: "Current cost and LRIC statements for year ending 30 June 2008, Accounting Documents", Eircom

HCA values may be used as a proxy for CCA values where the two cost valuations would be expected to yield results which are not materially different. This could be the case when one or more of the following conditions are met:

- an asset class has a relatively short asset life;
- an asset class forms a small overall part of the regulatory asset base; or
- where there has been little price movement since the asset was purchased.

## 2.3 Summary of the criteria for the choice of valuation approach

As previously mentioned in this section, Annexe 3 contains the required categorisation of assets and the revaluation approach for each category. While indexation is the approach set out in the Costing Methodology, there may be specific circumstances under which alternative revaluation approaches may be required.

The table below sets out the criteria for the choice of valuation approach as set out in Annexe 3.

**Table 3.** Criteria for alternative asset valuation approaches

| Valuation approach | Criteria |
|---|---|
| **Direct valuation** | Assets where a suitable price index does not exist but where information is readily available on the unit replacement costs and the quantity of the assets |
| **MEA valuation** | Assets which are no longer available for purchase or no longer represent the modern technology used in network deployment |
| **No revaluation required (use HCA valuation as proxy)** | Either:<br>• The asset is relatively new and there are no *a priori* expectations that the value will change; or<br>• The asset has a relatively short asset life; or<br>• The asset does not contribute materially to the overall value of the asset base |

Source: Frontier

Alternative valuation methodologies may be used by concessionaires where they can provide sufficient evidence to show that this is a more accurate approach. In order to demonstrate that historic costs would be a suitable proxy, concessionaires would need to show that the asset was purchased relatively recently and that there have been no significant changes in the asset price since it was purchased, or that the impact would be immaterial. In the longer term it is unlikely that HCA will represent a good approximation and a change from HCA as a proxy to another methodology such as indexation could lead to a discontinuity in valuations and hence exceptional holding gains or losses. For this reason it will generally be more appropriate to apply CCA revaluations even where the HCA valuation is currently a reasonable proxy.

Compound indices may be necessary in order to reflect the part of asset costs accounted for by labour costs. In order to do this, concessionaires will need to be able to identify the proportion of asset costs accounted for by labour as this will be needed to determine the weights to use in the cost index.

***Statement on Asset Revaluation:***

*The Authority shall use the criteria outlined in Table 3 above to revalue the assets of concessionaires which will mean using the recommended revaluation approach for each cost category listed in Annexe 3 below.*

# 3.0 Step two: calculate gross replacement cost

When implementing CCA, the GRC of each asset class is calculated as an intermediate step (the GRC of the asset class is not used directly in the LRAIC model). The approach taken depends on the valuation method adopted for each of the asset classes.

### *Indexation*

For the indexation approach, the inputs are a time series of the GBV of the asset class by period (year) of acquisition and time series of the level of the price index over the same time period.

The GRC of the assets purchased in a given year ($t$) is then the GBV of the assets multiplied by the price index for the valuation data divided by the price index ($v$) for the year of acquisition. The price index for the acquisition year can be estimated as the value at the mid point of the period or a simple average of the opening and closing values. The GRC of the asset class in year n is then the sum of GRC of assets purchased in all years (excluding fully depreciated assets). This is calculated according to the formula below.

$$GRC_{t=n} = \left( GBV_{t=0} \times \frac{v_{t=n}}{v_{t=0}} \right) + \left( GBV_{t=1} \times \frac{v_{t=n}}{v_{t=1}} \right) + \left( GBV_{t=2} \times \frac{v_{t=n}}{v_{t=2}} \right) + \ldots + \left( GBV_{t=n} \times \frac{v_{t=n}}{v_{t=n}} \right)$$

### *Direct valuation*

For a direct valuation, the inputs are the quantity of assets for each element of the asset class and unit replacement costs for each of the assets.

The GRC of each element is calculated as the quantity of the element multiplied by the unit cost. The GRC of the asset class is then the sum of GRC of all elements in the asset class. This is calculated according to the formula below.

$$GRC_t = \left( number\ of\ network\ elements\ in\ current\ year \times unit\ GRC\ in\ current\ year \right)$$

### *Modern equivalent asset*

The first step in calculation of a MEA valuation is the estimation of the quantity of modern equivalent assets that would be required to replace the existing network. In some cases there is a direct one to one relationship with the existing assets and thus data on the quantity of existing assets can be used. However in many cases the configuration of the MEA technology is significantly different to the currently deployed technology and as such an estimate of the quantity of the

MEA required to serve the current level of demand must be made for engineering rules encapsulated in an engineering model.

Once the quantity of assets has been estimated and information on current prices has been collected the calculation of GRC is similar to that of a direct valuation.

#### *Proxy CCA with HCA*

In this case the estimate of GRC for the asset category is simply the GBV of the asset category.

## 3.1 Data sources

The table below sets out some of the possible data sources which operators may wish to use or consult with in preparing revaluations. These consist of data that may be available within the company and from publicly available resources.

Concessionaires will need to provide details of information sources used so that data can be verified if required by the Authority.

**Table 4.** Potential data sources

| Internal sources | External sources |
|---|---|
| • Framework agreements with network equipment suppliers and manufacturers<br>• Extrapolations from previous contracts and invoices<br>• Vendor price lists<br>• Management estimates of labour costs for installing different types of equipment and unit labour costs<br>• Engineering databases providing information on the quantity of assets within the network<br>• Engineering models than can be adapted to estimate the replacement cost of the network | • Labour costs prepared by the International Monetary Fund (IMF)<br>• Publicly available commodity price indices<br>• Assumptions used in cost models deployed in other countries<br>• Trinidad and Tobago national statistics agency indices for telecoms equipment, average earnings, producer prices and general price inflation<br>• US Bureau of Labor Statistics (BLS) producer price indices (PPI) for specific assets<br>• Privately compiled indices (such as the AUS Telephone Plant Index) adjusted to reflect country-specific costs |

Source: Frontier

# 4.0 Step three: calculate CCA inputs

This section sets out the methodology required by the Authority for the calculation of LRAIC cost inputs on a CCA basis, having calculated GRC according to the previous section.

## 4.1 CCA cost components

For each accounting period the capital costs used in the LRAIC model will consist of three components:

- CCA depreciation and amortization charges for the assets during the period;
- The WACC is applied to the NRC of the assets to reflect the opportunity cost to investors of investing.; and
- holding gains or losses, reflecting changes in asset value due to price movements during the period.

The NRC inputs will be used to estimate the opportunity cost of the capital employed in these assets expressed as the required rate of return on the net value of the assets (cost of capital)[10].

Holding gains and losses are included as a charge in order to ensure financial capital maintenance.

Each of these components is addressed in turn below.

### 4.1.1 CCA depreciation and amortization

Under HCA, the amortisation and depreciation charges are typically calculated using a straight line depreciation profile in which the annual charge is the same in every year of the life of the asset. The charge in each year is equal to the GBV divided by the asset life.

The Costing Methodology requires concessionaires to adopt the titled straight line depreciation method to proxy economic depreciation.[11] This method

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10 The cost of capital reflects the rate or return on capital investment required to compensate an operator for investing. The economically efficient allowable level is the weighted average cost of capital (WACC) which reflects the opportunity cost of investment. The estimation of the regulatory WACC is the subject of a separate reference paper and therefore not discussed as part of this CCA reference paper.

11 Source: "The Costing Methodology for the Telecommunications Sector", 29 May 20008. This document also contains discussion of alternative depreciation methods.

requires the adjustment of HCA straight line depreciation to reflect the current replacement cost of the asset.

The table below sets out an example of how CCA depreciation is calculated if straight line depreciation is assumed. In this example, the asset is originally valued at $100 and depreciated over ten years. It is then revalued at $150. The historic depreciation charge is $10 ($100/10 years) and the current cost depreciation charge is $15 ($150/10 years). The difference between the historic depreciation charge and the current cost depreciation charge is $5 ($15-$10). The difference between HCA depreciation and CCA depreciation is referred to as 'supplementary depreciation'. In this example, supplementary depreciation is positive since the value of the asset has increased over time. If the value decreased over time, supplementary depreciation would be negative.

**Table 5.** Illustration of supplementary depreciation

| Cost | Level |
|---|---|
| **Gross book value (historic cost)** | $100 |
| **Gross replacement cost (current value)** | $150 |
| **Historic depreciation charge** | $10 |
| **Current cost depreciation charge** | $15 |
| **Supplementary depreciation** | $5 |

Source: Frontier

### 4.1.2 Net replacement cost

The opportunity cost of capital is calculated by applying a regulated rate of return to an estimate of the capital employed. In the case of fixed assets, the capital employed is the valuation of the assets net of the effects of depreciation.

Under HCA the NBV of an asset is the initial acquisition cost of the asset (GBV) less the accumulated depreciation (AD) to date for the asset. Under straight line depreciation the NBV of an asset declines linearly between the point at which the asset is brought into service and the point at which it is fully depreciated[12]. Thus the NBV of an individual asset can be expressed as the GBV multiplied by the number of years in service as a proportion of the asset life.

[12] Assuming it has no salvage value.

Under CCA, the NRC of an asset must reflect the current replacement cost of an asset rather than the acquisition cost of the asset. Thus, under straight line depreciation the NRC of an individual asset can be expressed as the GRC multiplied by the number of years in service as a proportion of the asset life.

As depreciation charges for previous periods were calculated with respect to the replacement cost in those periods, rather than the current replacement cost, the NRC is not equal to GRC less accumulated (CCA) depreciation. Backlog depreciation is the additional depreciation that would have been charged in previous years had the asset always been valued at its current (closing year) GRC and is the difference between NRC and GRC less accumulated (CCA) depreciation.

### 4.1.3 Holding gains and losses

A change in asset prices during an accounting period leads to holding gains or holding losses, that is, changes in the NRC of assets which are not due to depreciation or amortisation. Holding gains arise when the unit replacement cost of an asset increases over the course of a year. Holding losses arise when the unit replacement cost of an asset decreases over the course of a year.

Capital maintenance is an underlying accounting principle, that profits can only be earned after capital has been maintained at a specified level. This is equivalent to requiring that capital charges must allow capital to be maintained.

Capital can be viewed in two ways. Operational capital is the company's capacity to produce products and services. Financial capital relates to the value of shareholders' equity interest. The choice of capital maintenance concept affects the way in which depreciation is calculated. Operating capital maintenance (OCM) maintains the operating capability of the business whereas financial capital maintenance (FCM) maintains the financial capital of the company in current price terms.

The Authority requires that the FCM concept be used and therefore holding gains and losses should be included in the annual capital charges. This means that shareholders' fund at the end of the period must be maintained at the same level as at the beginning of the period. As a result, holding gains and losses must be included within the cost base.

***Statement on Capital Maintenance:***

*The Authority shall use financial capital maintenance to calculate annual depreciation charges. As a result, holding gains and losses will be included within the cost base.*

## 4.2 Further adjustments and information requirements

### 4.2.1 Work in progress

Work in progress (WIP) relating to assets in the course of construction will need to be funded and as such should be included in the concessionaire's asset base for the purpose of estimating the mean capital employed and hence the cost of capital.

To ensure that concessionaires are allowed to earn a reasonable return on all their investments, concessionaires are required to provide information on the opening and closing WIP values for each of the asset categories defined for the CCA study.

### 4.2.2 Treatment of impaired assets

Periodic reviews of the net carrying value of assets against the future cash flows generated by these assets may result in write downs due to impairment. The Authority considers that impairments should be treated within the CCA study in a similar way to the treatment of impairments in concessionaire's statutory accounts. This requires making a series of adjustments to the outputs of the CCA model:

- net asset valuations should reflect any impairment made;
- depreciation and other charges after impairments have been applied should reflect the adjusted asset values; and
- where the carrying value of an asset is reduced in the closing balance sheet there should be a corresponding impairment charge.

This approach is consistent with the principle of Financial Capital Maintenance, adopted in the LRAIC model.

Impairment adjustments in statutory historic cost accounts(HCA) are made when a judgement at a given balance sheet date is made that the carrying value of the asset exceeds the recoverable value. An adjustment is then made to bring the carrying value into line with the recoverable value.

The estimate of the recoverable value will be the same for CCA purposes, as the recoverable value is based on the estimated value of the asset to the business rather than a calculation made with respect to acquisition cost (HCA) or replacement cost (CCA).

Generally speaking, when such an adjustment is made the recoverable value will also be lower than the equivalent carrying value in the CCA calculations (i.e., the

net replacement cost). Thus, when an impairment is made the asset valuation should also be adjusted in the CCA accounts to reflect this estimate of the recoverable cost and a corresponding charge made.

Once an impairment adjustment has been made, the link between the asset replacement cost and depreciation charges will have been broken, as the value will now reflect the estimate of the recoverable value. Thus, any forward looking valuations and capital charges will no longer reflect the costs of a hypothetical new entrant, which is the principal motivation for employing CCA for regulatory service costing.

There is no underlying economic reason for maintaining CCA adjustments for movements in asset prices that have been subject to impairment adjustments. Thus, the Authority has decided to calculate the depreciation and asset values required for the LRAIC modelling for these assets based on the statutory accounting information. As impairment will generally be applied to assets that have been made obsolete, this move to an HCA treatment is consistent with the principle that HCA may be applied as a valuation approach to assets with a relatively short asset life.

## 4.3 Calculating LRAIC inputs

The approach adopted for calculating the LRAIC inputs will depend on the approach taken for valuation and hence the information available for calculating the required inputs.

### *Indexation*

For the indexation approach, CCA depreciation and NRC can be calculated by applying the identified price indices to the corresponding HCA values.

The inputs required are a time series by period (year) of acquisition of the NBV and depreciation charge of the asset class and the price index over the same time period.

The NRC of the assets purchased in each year at a given date is then the NBV of the assets at that date multiplied by the price index for the valuation date divided by the price index for the year of acquisition. The NRC of the asset class is then the sum of NRC of assets purchased in all years (excluding fully depreciated assets).

$$NRC_{t=n} = \left( NBV_{t=0} \times \frac{v_{t=n}}{v_{t=0}} \right) + \left( NBV_{t=1} \times \frac{v_{t=n}}{v_{t=1}} \right) + \left( NBV_{t=2} \times \frac{v_{t=n}}{v_{t=2}} \right) + \ldots + \left( NBV_{t=n} \times \frac{v_{t=n}}{v_{t=n}} \right)$$

The CCA depreciation charge (D) for the assets purchased in each year (t) in an accounting period (n) is the HCA depreciation charge of the assets for that

period multiplied by the price index for that accounting period ($v_{t=n}$) divided by the price index for the year of acquisition. The CCA depreciation charge of the asset class is then the sum of CCA depreciation charges of assets purchased in all years (excluding fully depreciated assets).

$$D_{t=n} = \left( H_{t=0} \times \frac{v_{t=n}}{v_{t=0}} \right) + \left( H_{t=1} \times \frac{v_{t=n}}{v_{t=1}} \right) + \left( H_{t=2} \times \frac{v_{t=n}}{v_{t=2}} \right) + \ldots + \left( H_{t=n} \times \frac{v_{t=n}}{v_{t=n}} \right)$$

Holding gains and losses can then be calculated as a balancing item between the opening and closing net replacement cost.

*Closing NRC* =

*Opening NRC + Additions – NRC Disposals – Depreciation charge + Holding Gain*

### Direct valuation and MEA

Under a direct valuation or MEA approach because there is no direct link to the FAR, neither the acquisition date of individual assets nor the NBV of individual assets is known. Instead the calculation must be based on the GRC of an asset class which is known. In this case, there are two approaches to calculating depreciation charges for a particular asset class under CCA:

- the ratio method estimates NRC (or accumulated depreciation) for classes of assets and derives depreciation changes and holding gains and losses from this; and
- the rollover method estimates depreciation and holding gains/losses for each asset class and estimates NRC from these estimates.

It is likely that concessionaires will require a combination of the ratio method for some asset classes and the roll over method for other asset classes. The choice of method will depend on how the volume of assets in the category changes over time. In particular, the ratio method is more appropriate where volumes of equipment are relatively stable whereas the rollover method will be more appropriate where there have been significant ongoing additions or disposals. This is because the ratio method treats the holding gains/losses as a balancing item under the implicit assumption that the number of assets has not changed over the year. In contrast, the roll forward method calculates the holding gain / loss explicitly. The two depreciation approaches are discussed in further detail in Annexe 2.

### Proxy CCA with HCA

In this case the estimate of CCA depreciation and NRC for the asset category is simply the HCA depreciation and NBV respectively. As it is implicitly assumed that there have been no price movements holding gains and losses are zero.

## 4.4 Disposals and write outs

Disposals and write outs made within the accounting period should also be calculated on a CCA basis.

For assets that are part of an asset category revalued under the indexation approach, the value of disposals is calculated as:

*GRC of CCA disposals = HCA value of disposals * (opening GRC/ opening GBV)*

For assets that are part of an asset category revalued using a direct or MEA approach, the value of disposals is calculated as:

*GRC of CCA disposals = volume of disposals* CCA unit cost*

The NRC of disposals should then be calculated (using the same approach as outlined above) and subtracted from the total closing NRC.

# 5.0 Step four: cross check

The final step in preparing CCA cost information will be to cross check the outputs of the data preparation both with the inputs used and across outputs.

## 5.1 Cross-check with statutory accounts

The Authority will require information from concessionaires to demonstrate how the input costs (HCA costs) included in the CCA study relate to their statutory accounts. In order to do this, concessionaires will need to show, amongst others:

- total costs from statutory accounts;
- total network costs on an HCA basis;
- total cost of support equipment on an HCA basis;
- total retail costs on an HCA basis; and
- total cost exclusions on an HCA basis.

Concessionaires will not be required to make any changes to the way in which they report their statutory accounts. Concessionaires will not be required to use external auditors to verify the inputs to the study however audited statutory accounts are required.

Other ways in which the Authority may seek to verify data provided include:

- benchmarking between data provided by similar concessionaires;
- as data relating to a number of years becomes available, checks can be run comparing data submitted by a concessionaire between years; and
- benchmarking using publicly available information from comparable operators.

In addition, the Authority reserves the option to use reasonable assumptions if it does not consider that the data provided is an accurate reflection of the costs. Such adjustments could take place as a result of the efficiency study.

***Statement on Reconciliation of CCA study with Statutory Accounts:***

*The Authority requires that all concessionaires demonstrate how the HCA input costs included in the CCA study reconcile with their statutory accounts. Concessionaires shall be required to provide information from their profit and loss statements in the consolidated separated accounts on the main business areas.*

# Annexe 1: Glossary

**Table 6.** Glossary of terms and abbreviations

| Term | Description |
|---|---|
| **CCA** | Current cost accounting |
| **HCA** | Historic cost accounting |
| **NRC** | Net replacement cost |
| **NBV** | Net book value |
| **GBV** | Gross book value |
| **GRC** | Gross replacement cost |
| **WACC** | Weighted average cost of capital |
| **TATT** | Telecommunications Authority of Trinidad and Tobago |
| **LRAIC** | Long run average incremental cost |
| **MEA** | Modern equivalent asset |
| **FAR** | Fixed asset register |
| **SDH** | Synchronous digital hierarchy |
| **DSLAM** | Digital subscriber line access multiplexer |
| **IP** | Internet protocol |
| **PDH** | Plesiochronous digital hierarchy |
| **IMF** | International Monetary Fund |
| **BLS** | Bureau of Labour Statistics |
| **PPI** | Producer price index |
| **FCM** | Financial capital maintenance |
| **NPV** | Net present value |

Source: Frontier

# Annexe 2: Ratio and roll forwards methods

## RATIO METHOD

The ratio method is more appropriate in situations where volumes are relatively stable and the material impacts on GRC are from price fluctuations only. This is because high levels of recent additions can result in the estimated CCA values diverging from the true values.

### *Calculation steps*

Under the ratio approach the opening and closing current cost accumulated depreciation figures under CCA are calculated as the ratio of GRC to GBV multiplied by the historic cost accumulated depreciation.

*CCA depreciation charge = HCA depreciation * average (GRC/GBV)*

Where average *(GRC/GBV)= {(opening GRC/opening GBV)+(closing GRC/Closing GBV)}/2*

Similarly, the opening NRC is calculated using the ratio GRC to GBV.

*Opening NRC = Opening NBV * (GRC opening/GBV opening)*

The closing NRC is calculated in a similar way:

*Closing NRC = NBV Closing * (GRC closing/ GBV closing)*

The holding gain (loss) is the change in the value of NRC resulting from changing asset prices. Under the ratio method, this is calculated as the balancing item:

*Holding gain (loss)= Closing NRC – Opening NRC – CCA Depreciation charge*

## ROLL FORWARDS METHOD

The roll forward approach is used if the asset category has sub-categories of assets with a marked range of asset lives or if there are significant levels of current year additions. In contrast to the ratio approach, the holding gain (loss) is calculated explicitly rather than as a balancing item.

### *Calculation steps*

The CCA depreciation charge and opening NRC are calculated in the same way as under the ratio method. The holding gain (loss) takes explicit account of the change in asset prices in the year.. *Holding gain (loss)= (Opening NRC+CCA depreciation charge/2)* % price change*

Using this, the closing NRC is calculated as:

*Closing NRC = opening NRC + CCA depreciation charge + holding gain (loss)*

# Annexe 3: Categorisation and revaluation of assets and asset lives

This Annexe sets out the categorisation of assets used for the provision of telecommunications services in Trinidad and Tobago:

Each of the tables set out the further categorisation of assets, revaluation approach, revaluation data source and asset lives.

### *High level asset categories*

Assets are split into four high level categories.

- mobile network components;
- fixed network components;
- network infrastructure assets; and
- non-network (support) assets.

These categories are then further broken into more specific asset categories. Concessionaires will be required to provide sufficient evidence in order to add additional asset categories.

### *Data sources*

The data sources identified in the tables consist of:

- the concessionaires' own data from their FARs;
- publicly available indices and those used for regulatory purposes;
- the Central Statistics Office; and
- the AUS Telephone Plant Index (AUS TPI).

Alternative sources may be used where objective justification can be provided.

Examples of publicly available sources may include the LRIC models and documentation developed for Sweden, the UK, Denmark and Norway. Documentation also exists for Jamaica and the Eastern Caribbean which may also provide some information.

The AUS Telephone Plant Indices (AUS TPI), formerly known as Turner Indices, are cost indices publicly available on a subscription basis. The indices are prepared by independent consultants and are used widely by operators for

regulatory and statutory accounting purposes. The indices are designed as generalised products as it is not possible to construct an index that exactly matches the changes in input prices for each operator in every country. The indices are designed to show reproduction costs rather than replacement costs but are widely accepted in a number of jurisdictions as providing an appropriate proxy. AUS prepares 31 indices for six different geographic regions:

- North Atlantic
- South Atlantic;
- North Central;
- South Central;
- Plateau; and
- Pacific Coast).

For tradable equipment we would not expect a significant divergence between the movements in the indices and as such we would not expect the choice of index to have a material impact on the results. Based on geographic proximity the Authority has decided to use the 'South Atlantic' index.

A significant share of the asset categories, in particular those relating to fixed network assets, will be revalued using one of the AUS TPIs. However, the coverage of the AUS TPIs are restricted to fixed network assets and alternative indices must be found for other assets, for example, mobile network assets.

***Mobile network assets***

For those infrastructure assets which are largely consist of locally sourced inputs, such as masts and towers, the Authority proposes to use a general inflation index, as shown in the table below.

For those assets largely imported, although representing the most appropriate price index for fixed network assets, the AUS TPI index does not cover mobile network assets. As such, the Authority has decided to use a price index for these assets based on price indices sourced from the U.S. Bureau of Labour Statistics (BLS)[13].[14]

13 http://www.bls.gov/

14 The most appropriate US BLS price index is only available from 2009. Thus, to ensure applying a consistent price index covering the entire period over which currently installed mobile network equipment may have been purchased the Authority has developed a composite index based on three US BLS export price indices.

***Adjustments to US Indices***

The AUS TPI indices and the US export price indices reflect prices in US dollars in the US. The price series therefore have been adjusted to reflect two differences in prices paid in Trinidad and Tobago (i) exchange rate movements; and (ii) changes in import tariffs.

### *Asset lives*

The asset lives in the tables below are based on publicly available information on asset lives used for regulatory purposes for fixed and mobile operators from a number of different jurisdictions worldwide including the Caribbean and Western Europe. Alternative asset lives may be used where justification can be provided.

**Table 7.** Revaluation approach and asset lives for mobile network components

| | Abbreviation | Notes | Revaluation approach | Data source for revaluation | Asset life (years) |
|---|---|---|---|---|---|
| **Base station** | BTS | Include transceivers | Indexation | US Export Index for wireless equipment | 10 |
| **Base station controller** | BSC | | Indexation | US Export Index for wireless equipment | 10 |
| **Mobile switching centre** | MSC | Also called call servers and act as gateways. BSC facing, interconnect facing and interswitch ports should be included as well as the visitor location register (VLR). | Indexation | US Export Index for wireless equipment | 10 |
| **GPR, GGSN and SGSN** | GPRS equipment | General packet radio platform, gateway GRPS support node and serving GPRS support node | Indexation | US Export Index for wireless equipment | 10 |
| **Short message service centre** | SMSC | | Indexation | US Export Index for wireless equipment | 5 |
| **Voice mail system** | VMS | | Indexation | US Export Index for wireless equipment | 5 |
| **Home location register** | HLR | | Indexation | US Export Index for wireless equipment | 5 |
| **Network management system** | NMS | | Indexation | US Export Index for wireless equipment | 5 |

| | | | | | |
|---|---|---|---|---|---|
| **Signal transfer point** | STP | | Indexation | US Export Index for wireless equipment | 10 |
| **BTS to BSC link** | BTS to BSC link | Include only where this is dedicated equipment (e.g. microwave links solely for the purposes of backhaul) and specify the technology used (e.g. microwave or fibre). | Indexation | US Export Index for wireless equipment | 10 |
| **Dedicated Mobile Network Land** | | This covers all land dedicated to Mobile service | Indexation | AUS TPI | 40 |
| **Dedicated Mobile Network Buildings** | | This covers all buildings dedicated to Mobile service | Indexation | General inflation | Infinite |
| **Dedicated GSM Mast and Towers** | | This category captures all Towers and Masts that are dedicated to mobile services | Indexation | General inflation | 25 |
| **Dedicated Mobile Security System** | | This category captures security systems dedicated to mobile cell sites | Indexation | US Export Index for wireless equipment | 10 |

Source: Frontier Economics

**Table 8.** Revaluation approach and asset lives for fixed network components

| | Abbreviation | Notes | Revaluation approach | Data source for revaluation | Asset life (years) |
|---|---|---|---|---|---|
| **Main distribution frame** | MDF | | Indexation | AUS TPI | 15 |
| **Remote concentrator** | RCU | Equipment connecting copper access lines for the purpose of providing TDM voice access with a concentrator function for onwards transmission of the traffic generated by the subscribers to a switch (independently of the protocol used) but with no switching capability. May also aggregate traffic from other voice concentrators and connect fibre connected voice customers. | Indexation | AUS TPI | 15 |
| **Digital local exchange** | DLE | Equipment providing voice switching capabilities for access lines either directly connected over fibre or copper or through concentrators. Switches may operate independently or rely fully or partially on a signalling connection to a host switch | Indexation | AUS TPI | 15 |
| **Digital tandem exchange** | DTX | Switch connecting to other switches but not connecting to access lines or voice concentrators | Indexation | AUS TPI | 12 |
| **International switch centre** | ISC | | Indexation | AUS TPI | 12 |
| **VOIP soft switch or media gateway** | VOIP | | Indexation | AUS TPI | 5 |
| **Network management system** | NMS | | Indexation | AUS TPI | 5 |
| **Intelligent network platform** | IN | | Indexation | AUS TPI | 12 |
| **Co-axial cable** | Co-axial cable | | Indexation | AUS TPI | 15 |
| **Twisted pair cable** | Twisted pair | | Indexation | AUS TPI | 15 |
| **Access fibre** | Access fibre | | Indexation | AUS TPI | 15 |
| **HFC optical node** | HFC optical node | Provides interface between fibre and co-axial network in HFC cable networks | Indexation | AUS TPI | 8 |
| **Point to point wireless** | Point to point wireless | | Indexation | AUS TPI | 8 |
| **Point to multi-point wireless** | Point to multi-point wireless | | Indexation | AUS TPI | 8 |
| **Pre-wiring of client premises and first time installations** | Customer premise wiring and FTI | | Indexation | AUS TPI | 10 |
| **DSLAM** | DSLAM | Equipment connecting copper access lines for the purpose of providing DSL broadband access services with a concentrator function for onwards | Indexation | AUS TPI | 5 |

| | | | | | |
|---|---|---|---|---|---|
| | | transmission of the traffic generated by the subscribers. May also aggregate traffic from other DSLAMs. | | | |
| **MSAN** | MSAN | Equipment connecting copper access lines for the purpose of providing both TDM voice access and DSL broadband access services | Indexation | AUS TPI | 5 |
| **Cable headend equipment - television broadcast** | CHE- TV broadcast | | Indexation | AUS TPI | 8 |
| **Cable headend equipment - DOCSIS receiver** | CHE- DOCSIS receiver | | Indexation | AUS TPI | 8 |
| **Cable headend equipment - Telephony** | CHE - Telephony | | Indexation | AUS TPI | 8 |
| **Packet switched aggregation node** | PSAN | Node which aggregate packet switched data traffic from DSLAMs or MSANs or directly connected fibre customers without routing the traffic | Indexation | AUS TPI | 8 |
| **Packet switched router** | PSR | | Indexation | AUS TPI | 8 |
| **Broadband Remote Access Service** | BRAS | | Indexation | AUS TPI | 8 |
| **CATV distribution hub** | | Node aggregating traffic between HFC optical nodes and the head end | Indexation | AUS TPI | 8 |
| **Other Network Equipment** | | | Indexation | AUS TPI | 10 |
| **Data Network Equipment** | | | Indexation | AUS TPI | 10 |
| **DSL Equipment** | | | Indexation | AUS TPI | 10 |
| **Local Loop Aerial Cables** | | | Indexation | AUS TPI | 10 |
| **Local Loop Underground Cables** | | | Indexation | AUS TPI | 10 |
| **IP MPLS Core** | | | Indexation | AUS TPI | 10 |
| **Wireless Local Loop** | | | Indexation | AUS TPI | 10 |
| **Underground Cable** | | | Indexation | AUS TPI | 10 |
| **IPTV Equipment** | | | Indexation | AUS TPI | 10 |
| **ISDN** | | | Indexation | AUS TPI | 10 |
| **NGN LINE MEDIA** | | | Indexation | AUS TPI | 10 |
| **NGN TRUNK MEDIA** | | | Indexation | AUS TPI | 10 |
| **Interconnection Equipment** | | | Indexation | AUS TPI | 10 |
| **Fixed Line Voicemail** | | | Indexation | General inflation | 10 |
| **Video conferencing Equipment** | | Equipment used in the provision of Video Conferencing Services | Indexation | AUS TPI | 10 |

Source: Frontier Economics

**Table 9.** Revaluation approach and asset lives for network infrastructure assets

| | Abbreviation | Notes | Revaluation approach | Data source for revaluation | Asset life (years) |
|---|---|---|---|---|---|
| **Duct** | Duct | | Indexation | General inflation | 40 |
| **Local loop poles** | Local loop poles | | Indexation | AUS TPI | 15 |
| **Signalling equipment** | SS7 | | Indexation | AUS TPI | 10 |
| **Transmission Infrastructure** | Xmn Infrastructure | | Indexation | AUS TPI | 15 |
| **Transmission equipment - SDH** | Xmn equipment - SDH | | Indexation | AUS TPI | 15 |
| **Transmission equipment - PDH** | Xmn equipment - PDH | Legacy equipment | MEA - used SDH as the MEA | Supplier price quotes/ publicly available regulatory cost models/accounts | 15 |
| **Power equipment** | Power equipment | | Indexation | AUS TPI | 15 |
| **Network buildings** | Network buildings | Including building which also house non-network staff and activities | Indexation | AUS TPI | 40 (freehold); or unexpired portion of lease at time of purchase |
| **Masts& towers** | Masts& towers | | Indexation | AUS TPI | 25 |
| **Network land** | Network land | | Indexation | General inflation | Infinite (freehold); or unexpired portion of lease at time of purchase |
| **Motor vehicles - network** | Motor vehicles - network | | Indexation | AUS TPI | 5 |
| **Fibre cables (core)** | Fibre cables (core) | | Indexation | AUS TPI | 15 |
| **Microwave transmission equipment (core)** | Microwave transmission equipment (core) | | Indexation | AUS TPI | 15 |
| **International subsea cables** | | Including wholly owned cables and partial ownership (IRU) along with associated infrastructure such as cable landing stations | Indexation | AUS TPI | 15 |
| **CDMA Equipment** | | | Indexation | US Export Index for wireless equipment | 10 |
| **Local Loop / Distribution Equipment** | | | Indexation | AUS TPI | 10 |
| **International Transmission SDH** | | | Indexation | AUS TPI | 10 |
| **Internet Service Provision Equipment** | | | HCA proxy | Concessionaire fixed asset register | 10 |
| **Network Poles** | | | Indexation | AUS TPI | 10 |
| **Manholes** | | | Indexation | General inflation | 10 |
| **Network tools** | | | Indexation | AUS TPI | 10 |
| **Local Loop / Feeder Equipment** | | | Indexation | AUS TPI | 10 |
| **GSM hardware** | | | Indexation | US Export Index for wireless equipment | 10 |
| **Network Common** | | Captures shared Network | HCA proxy | Concessionaire fixed asset | 10 |

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| | | items that are non specific and stocked for installation works | | register | |

Source: Frontier Economics

**Table 10.** Revaluation approach and asset lives for non-network assets

| Non-network assets | Abbreviation | Notes | Revaluation approach | Data source for revaluation | Asset life (years) |
|---|---|---|---|---|---|
| **Non-network buildings** | Non-network buildings | | Indexation | AUS TPI | 40 (freehold); or unexpired portion of lease at time of purchase |
| **Land - non network** | Land - non network | | Indexation | General inflation | Infinite (freehold); or unexpired portion of lease at time of purchase |
| **Furniture and office equipment** | Furniture and office equipment | | Indexation | AUS TPI | 8 |
| **Training equipment** | Training equipment | | Indexation | AUS TPI | 8 |
| **Vehicles - non-network** | Vehicles - non-network | | Indexation | AUS TPI | 5 |
| **Payphones** | Payphones | | Indexation | AUS TPI | 5 |
| **IT /General purpose computers** | IT /General purpose computers | | Indexation | AUS TPI | 5 |
| **Network management** | Network management | | Indexation | AUS TPI | 5 |
| **Marketing, retail, customer support** | Marketing and retail | | Indexation | AUS TPI | 3 |
| **Customer premise equipment - fixed** | CPE - fixed | e.g. modems | Indexation | AUS TPI | 5 |
| **Customer premise equipment - mobile** | CPE - mobile | e.g. handsets | Indexation | AUS TPI | 3 |
| **Prepaid service platform** | PRP | | HCA proxy | Concessionaire fixed asset register | 5 |
| **Billing system** | BIL | | HCA proxy | Concessionaire fixed asset register | 5 |
| **Customer management system** | CMS | | HCA proxy | Concessionaire fixed asset register | 5 |
| **Interconnect billing** | IB | | Indexation | AUS TPI | 5 |
| **Mobile Retail Assets** | | Dedicated Mobile Billing System | HCA proxy | Concessionaire fixed asset register | 10 |
| **Non-Network Assets** | | Dedicated GSM Customer Management System | HCA proxy | Concessionaire fixed asset register | 10 |
| **Dedicated Roaming Platform** | | Dedicated GSM Roaming Platform | Indexation | US Export Index for wireless equipment | 10 |
| **Non Telecom Assets** | | All Equipment/Assets | HCA proxy | Concessionaire fixed asset | 10 |

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| | dedicated to NoN-Telecom Services, e.g. - Security Systems for Blink Vigilance | register |

Source: Frontier Economics

# Annexe 4: Decisions on recommendations - First Round

The following summarizes the comments and recommendations received from stakeholders on the first draft of this .document (dated September 1st 2009), and the decisions made by the Authority as incorporated in the revised document (dated 22nd December 2009)

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| **General Comment** | | | | |
| General: 1.1 – 3.1 | TSTT | The Telecommunications Authority of Trinidad and Tobago (TATT) has proposed implementing a costing methodology and is seeking comment on "Top Down Long Run Average Incremental Cost (LRAIC) Model Specification Paper" and "Current Cost Accounting Reference Paper". TATT has engaged Frontier Economics as consultants to assist in this undertaking. Telecommunications Services of Trinidad and Tobago (TSTT) hereby provides its comments on these proposals.<br><br>Before entering into a discussion and detailed commentary on the specifics of what TATT is here proposing, TSTT wishes to enter a general observation on the overall direction and effect | Discontinue the pursuit of ex-ante regulatory regimes and shift the focus more towards ex-post regulatory measures appropriately suited to the rapidly changing Telecommunications environment in Trinidad and Tobago | Almost every jurisdiction with liberalised telecommunications market relies to an extent on ex ante regulation. While some jurisdictions, for example EU countries, have withdrawn some ex ante regulation of retail services, this has been due to effective ex ante regulation of wholesale access services.<br><br>Even in jurisdictions where there a number of network operators and retail service provides, network operators have been deemed to still maintain a monopoly over termination of calls to subscribers on their networks and as such termination is subject to ex ante regulation.<br><br>Under the Telecommunications Act, concessionaires are required to provide access to their networks and |

[15] Regional regulatory or Governmental agencies, Existing service and/ or network provider and affiliates, Potential service and/ or network providers and affiliates, Service/ Network Provider Associations/ Clubs/ Groups, General Public

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| | | of this regulatory initiative: TATT is here proposing that all the telecommunications operators in the country expend considerable amounts of time and money to build outdated regulatory tools that will be detrimental to the interests of the country's consumers, the protection of whom is the ostensible reason for the regulation that TATT is supposed to conduct. If the proposed regulation is indeed detrimental to the country's consumers, then it should not be done, and the tools that TATT is building to implement that regulation should not be built, regardless of the cost involved. However, there can also be no question that the proposed tools are costly tools. Even if the proposed regulatory intervention were somehow to be seen as providing some benefits to consumers, it would need to be justified as producing benefits that are greater than the costs involved, and that is just not the case with these proposed regulations and regulatory tools.<br><br>The economic regulation that TATT is authorized to undertake has as its principal objective the protection of consumers and the promotion of competition. In the absence of effective competition, TATT is authorized to intervene to bring about the benefits that a competitive outcome would produce. In other | | interconnection at charges that reflect underlying costs. The need for a cost model was also identified as part of the first interconnection dispute between TSTT and Digicel in which the Arbitration Panel recommended that "the Authority consider developing a sector specific cost model for the purposes of considering whether proposed charges comply with the regulatory framework or for setting charges if so required."<br><br>Having one cost model that covers a range of wholesale and retail services can help to reduce the burden on concessionaires and the regulator where cost information is required on a number of services for both ex post and ex ante regulation. Further, having one cost model can help to provide the concessionaires with more certainty and can allow TATT to assess interconnection disputes and proposed regulation more rapidly and in a more consistent way than conducting a costing or benchmarking exercise on a case by case basis.<br><br>TSTT argues that regulators in other jurisdictions have "largely abandoned" the use of cost modelling and CCA revaluation as a result of convergence. It is not clear which specific examples TSTT is referring to as these regulatory measures are still employed in a number of jurisdictions in the Caribbean, Europe and the Middle East (including in small jurisdictions such as Cayman Islands, Bahrain and Guernsey). |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| | | words, TATT's regulation is to serve as a proxy for marketplace forces, if those market forces are not effective. However, if those marketplace forces are present and achieving their desired beneficial effects, then there is no need for TATT to intervene with the kind of tools that it is here proposing to impose on the country's operators.<br><br>With this initiative, TATT is requiring the entire telecommunications sector, all the principal operators in the country, to undertake significant expenditure of to build these regulatory tools. TATT itself is spending considerable public resources in contracting external consultants. Because of the considerable costs involved, the stakes are high on the wager that TATT is placing with its proposal. By imposing a solution before it has determined (1) that there is a problem to be solved and (2) that the solution it proposes is the appropriate one for the specific problem identified, TATT risks both public resources and private sector resources on an endeavour that may turn out in the end to have been for nothing. TSTT has urged in previous communications with TATT that a relevant market analysis be undertaken first, before imposing expensive and intrusive regulatory | | The use of a single LRAIC model to show costs for the full range of network services should ensure consistency in cost calculation and cost recovery across services and concessionaires and in addition should reduce the total resources required compared to developing separate costing methodologies for each tariff decision.<br><br>The CCA reference paper has been developed taking into consideration the characteristics of the telecommunications market in T&T. In particular, recognising the size of the market and the resource constraints faced by operators, the methodologies have been simplified. For example, the indexation approach to revaluation has been recommended for the majority of assets in order to avoid the need for direct revaluation of assets. |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| | | interventions. In this examination of relevant markets, TATT should determine to what extent there are competitive alternatives for the services offered in the telecommunications sector. For the major categories of services, TSTT points out that there are effective competitive alternatives present today in Trinidad and Tobago. For voice telephony, besides the traditional landline services offered by TSTT, mobile services are available from other providers that consumers consider as attractive substitutes for landline services. Voice over Internet Protocol (VoIP) services are available as competitive alternatives using the Internet networks and are widely used. Data (Internet) services are available from a variety of network providers in Trinidad and Tobago, including from TSTT's own network, cable television networks, and mobile telephony networks.<br><br>This convergence of networks and services is not unique to Trinidad and Tobago. It is being seen throughout the world. The developed country jurisdictions that in years past had adopted regulatory tools similar to those that TATT is now proposing, have largely abandoned the use of these tools, primarily because they have recognized that this | | |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| | | convergence is important and it supplants the need for these intrusive regulatory tools. Now what we see is that TATT is mimicking other jurisdictions without giving much thought for the rationale that should be considered first to justify the use of these tools. The presence of actual effective competition obviates the need for intrusive regulatory intervention that was designed in a much different, earlier time to compensate for what was perceived then to be the absence of effective competition.<br><br>TATT's own statement of its modelling objectives supports the view that these regulatory tools are intended for use after, not before, a competition problem has been found to exist. According to TATT, the costing model is designed for:<br><br>• Determining the rates for accessing unbundled facilities (that is itself a remedy to be used only when there is a demand for such unbundling and where competitive alternatives do not exist, which is not the case in Trinidad and Tobago);<br>• Determining the rates for telecommunications services in which | | |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| | | there is a monopoly or a dominant provider in an uncontested market (which is not the case in Trinidad and Tobago);<br>• Determining rates for telecommunications services provided by a dominant provider in a contested market (which is not the case in Trinidad and Tobago);<br>• Detecting unfair cross subsidies or anti-competitive prices (which have not been shown to be the case yet, and which ultimately should be dealt with in competitive markets by the same competition law that governs the other competitive markets in Trinidad and Tobago).<br><br>The costing model is also designed to be used for determining interconnection rates. This may well be a regulatory function that TATT should continue to take a role in mediating disputes between competitive providers. However, if this were the only modelling objective, and it does appear to be the only one for which a demonstrated need could be shown, then it could be achieved easily with much less costly | | |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| | | measures than those being proposed here by TATT.<br><br>The Current Cost Accounting proposal is being put forward to provide cost inputs to the Long Run Average Incremental Cost model. As a general observation, if the LRAIC model is an unwarranted and unnecessary regulatory intervention, then the inputs to that model (the CCA proposal) are unnecessary as well. TSTT and the other telecommunications operators are already required to maintain books and records in their statutory accounts. TATT's CCA proposal would require all the operators to establish and maintain over time an additional, separate set of books and records covering all their operations. In other words, each asset would appear twice and be valued twice, once in the statutory accounts and again in the CCA accounts | | |
| General | Windward | Windward Telecom Limited appreciates the opportunity to provide its comments on the Current Cost Accounting Reference Paper. Based upon the reference paper, Windward is uncertain as to whether or not its facilities would be subject to CCA given that it operates neither a fixed nor mobile service in Trinidad | | In accordance with the Act, the Authority will apply this obligation in a non-discriminatory manner. Therefore all concessionaires will be required to participate in both the CCA study and the LRAIC modeling exercise. The cost model is a requirement of the Telecommunications Act and a directive to the Authority from the Arbitration Panel on the interconnection dispute between TSTT and Digicel. |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| | | and Tobago at this juncture. | | |
| | Columbus | The revaluation of assets and the adoption of the current cost accounting methods is understandably a needed aspect of the telecommunications industries control mechanism seeking to provide the best telecommunications industry standard. Concessionaires welcome this CCA method in conjunction with the LRAIC model. It would be appreciated for TATT to provide concessionaires with a more face-to-face forum to air difficulties, which may present themselves as we move towards the February 2010 deadline. This would assist in the speedy and accurate adoption of LRAIC and CCA accounting method. | | The Authority is currently considering the scope for providing training in the principles and implementation of CCA and LRAIC. |
| General | ICNTT | ICNTT notes the CCA approach outlined by TATT and Frontier Economics and holds reservation only with regard to the complexity of these alternative regulatory accounts and associated administrative burden on small concessionaires.<br><br>ICNTT is pleased however with the indication in the Annexes to the development of some form of automated system that will facilitate the | | No response required (response to reservation about LRAIC specification paper addressed in separate response document<br><br>The Authority advises ICNTT that the network topology used in the LRAIC paper conforms to that of an efficient network which would be expected of a typical cable TV provider with a central head end. |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| | | revaluation of assets in a timely fashion.<br><br>However, ICNTT reiterates the concern mentioned in the LRAIC Specification paper about a review of network topology assumptions made in the determination of the model's internal logic. | | |
| **Section 1 - Overview** | | | | |
| p. 4<br>1.4.1 - **Capital Cost**<br>The Authority requires that all concessionaries provide CCA based cost estimates for all their fixed assets | TSTT | The implementation of a CCA system needs from the beginning the definition of the exact lines of business that such a system would include. It seems that there would be an excessive number of lines of business for TSTT. Thus, according to TATT, the TD-LRAIC model and the CCA system would target at least 11 retail services and 14 wholesale services.[16] This means that both the TSTT's LRAIC model and CCA system would contain 25 services, which would demand a substantial effort on behalf of TSTT. Countries that still have accounting separation systems in place | The Authority needs to define the specific lines of business that TSTT's CCA system will have.<br><br>TSTT recommends to develop a separation accounting system with a small number of lines of business for TSTT. For instance TSTT could implement a four service accounting separation system similar to that in Australia. The core services would be: unconditional local loop; origination/termination in fixed | The accounting separation guidelines are set out in a separate document: "Proposed accounting separation guidelines for the telecommunications sector", 27 June 2008, TATT 2/3/14. These are not the subject of this consultation.<br>TSTT provides some examples of regulatory practice elsewhere provided by TSTT although this seems to suggest that TSTT is unclear on the costing principles set out in the Costing Methodology and expanded on in this consultation and there relationship with other potential approaches. Therefore, the Authority provides some clarification on costing standards and approaches below. Where AS is required, there are a number of options in terms of the cost inputs and the allocation methodology. The cost inputs can |

[16] Table 2, p.15 at TATT's *Top-Down Average Incremental Cost (LRAIC) Model Specification paper.*

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| used in the provision of fixed and mobile services in TT | | supervise a small number of lines of business. For instance in Australia, Telstra's accounting separation system reports costs accounting information for just three "core services": unconditioned local loop service; domestic PSTN originating/terminating services; and local carriage services.<br><br>The Authority also needs to understand that the degree of complexity to detect cross-subsidies grows exponentially with the number of services. When analyzing more than two services, both the incremental cost test and stand-alone test used to detect cross-subsidization must be applied not only to each service individually, but also to all possible groups of services. Some authors call these two tests also "combinatorial cost tests." The number of combinations of services to be tested grows exponentially as the number of firm's services increases.<br><br>The Authority is requiring concessionaries to | networks; origination/termination in wireless services; and local carriage services. Even with these 4 lines of services a "combinatorial test" to detect cross-subsidies would require to test 15 possible service combinations. | be reported on a historic cost accounting basis (HCA) or a CCA basis. Under HCA, the input costs are the costs actually incurred by the operator (although there may be some adjustment for efficiency). Under CCA, the input costs are based on the costs that would be incurred by an efficient operator today.<br><br>The costs of an operator can be allocated across various services using two main methodologies. The first is fully allocated costs (FAC, also known as fully distributed costs or FDC) where costs are typically allocated to network elements based on cost allocation keys and then to services based on routing factors. The second is LRIC based costing methodology which is similar to FAC except that costs of network elements are determined using CVRs.<br><br>TSTT's recommendation to focus on regulating upstream services based on regulatory precedent does not appear to be valid. While in some countries wholesale access services are subject to stronger regulatory obligations than retail markets, this reflects different stages of market development and maturity. In particular, until wholesale access products are sufficient developed to enable sufficient competition in the retail market deregulation will not typically lead to increased consumer benefits since it is still possible that a dominant |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| | | undertake a CCA revaluation study of their fixed assets, which would involve a substantial effort in terms of time, labor and other resources. This would be costly for TSTT since it would involve, among other things, the hiring of external consultants and devote substantial internal resources for these tasks.<br><br>The Authority should pay attention to the regulatory practice elsewhere. For retail service accounting systems most of regulatory authorities use mainly fully distribute costs standards. In contrast, for wholesale services AS systems, they use CCA.. Thus, the European Regulation Group in its latest Annual evaluation states:<br><br>"As far as the accounting methodology is concerned, in 2008 FDC is, by far, the most commonly used in retail access markets. LRIC is widely used in all wholesale markets."[17] (p.10) | | operator will be able to increase prices at least in the short term.[18]<br><br>TSTT's recommendation to use price cap mechanisms rather than cost based pricing does not obviate the need for a model to determine the costs of regulated services. The objective of price caps (and *ex ante* regulatory more generally) is to have prices that better reflect the prices that would prevail in a competitive market. This means prices that reflect the underlying costs of provision and how these change over time. Therefore, when setting a price cap, the starting or end point will need to take account of costs and this can be determined using a LRAIC model. |

[17] ERG Report. *Regulatory Accounting in Practice 2008*. September 2008. It can be downloaded from http://www.irg.eu/template20.jsp?categoryId=260350&contentId=543311

[18] In the longer term, new entrants will enter the market if wholesale regulation is effective.

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| | | "The data comparison confirms the important trends already observed in last years, that is to say a further consolidation in the use of Current Cost Accounting (CCA) as the preferred cost base for wholesale markets, both fixed and mobile (with the only exception of the market for terminating segments of leased lines) accompanied by an always more extensively use of Long Run Average Incremental Cost (LRIC/LRAIC) methodologies both in the fixed and in mobile wholesale markets." (p. 3)<br><br>There are also other developed countries that are abandoning accounting separation systems and concentrating on cost estimations for specific services whenever there is a specific need. For instance, in the US the FCC has recently started to dismantle its ARMIS system (Automated Reporting Management Information System) since deregulation has started to take place in the traditional telephony market. A similar situation happened in Canada a few years ago. There the regulator CRTC decided not to continue with accounting separation systems as a way to regulate ex - ante anti competitive conducts coming from ILECs. | Modern regulatory practice and good economic principles recommend to regulate retail prices using price-cap mechanisms (such as global price-caps) in order to maximize economic efficiency.<br><br>The EC recommends that if remedies are needed in cases of presence of SMP in a relevant market, the Authority should look first for remedies to be imposed on upstream markets (wholesale markets). This explains why regulators elsewhere are concentrating price regulation on wholesale markets. | |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| p. 6 **Accounting Separation and CCA**<br>All concessionaries providing two or more services, submit separated accounts on an annual basis using the CCA methodology | TSTT | AS and CCA would impose significant compliance costs for stakeholders (TSTT, other concessionaries, the Authority) because of the complex methodological issues that would require resolution before they could be implemented.<br><br>We have recommended elsewhere on the use of global price caps to regulate prices. But if price-caps are not adopted, the Authority still could think on developing more efficient regulatory instruments than accounting separation systems. For instance, a more cost effective regulatory approach would be for the Authority to require specific economic studies to be done for those services subject to price regulation. The methodology to be used in those economic studies could be very well performed using the incremental costing standard as required by the Authority. Suppose TSTT requires a tariff change for its access tariffs charged to final customers. TSTT then would need to submit a cost study on access tariffs to TSTT for its approval using an incremental costing approach. Of course, there would also be the | In the absence of price-caps, the Authority could use more cost effective regulatory approaches, if it requires that tariff changes of regulated services be approved by the Authority, then submitting an economic study using the incremental cost standard specifically for the service/s should suffice. | The use of a single LRAIC model to show costs for the full range of network services should ensure consistency in cost calculation and cost recovery across services and concessionaires. Developing separate methodologies and models would be very resource intensive in comparison to developing one model for each concessionaire.<br>The implementation of a price cap would be policy decision for the Authority to make in the future. Nevertheless, the outputs of the cost model would provide an initial reference point for the nature and level of price controls. |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| | | need in this case to have a detailed manual to undertake this type of costing studies based on guidelines issued by the Authority.<br><br>A good reference is Canada. Back in the 70s, the regulator there started price regulation and monitoring of competitive fair practices by using detailed historical cost accounting systems for ILECs. It took years to develop guidelines, manuals, implement accounting systems, etc. before results were obtained. Over the years the regulatory accounting systems evolved from Fully Allocated Costs to CCA costs. However, in early 90s the regulator stopped using accounting separation systems as a tool to regulate prices and competitive behavior and replaced them with regulatory filings, by which any tariff application for a service introduction or existing regulated service should be done through economic studies based on incremental cost standards.<br><br>This light-handed regulatory approach would avoid the need to develop and maintain large accounting separation systems. | | |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| | Columbus | This section is done in an easily understood manner. It facilitates easy assimilation of information | None! | No response required. |
| **Section 2: Step 1 –Categorize Assets and choose General Valuation Method** | | | | |
| (A) Categorization of assets<br><br>(B) Revaluation method | Columbus | No apparent mention is this category about cable television services and how the categorization of cable asset costs will be separated. Columbus communications may have great difficulty with categorization being that our plant distribution serves our three offered services. The services being broadband, telephone, and cable TV services .Cable modems and hub equipment have multiple purposes and serve all three products.<br><br>Indexation is the default method of valuation recommended but is better used in areas of little technological change but Columbus tends to be changing out technology. Explicit evidence of this is right now Columbus is changing analog to digital. The revaluation method is also very detailed per item driven which means the process would have to be detailed and time consuming. Flow has partly | Guidance from TATT of the treatment of cable television services costs, telephony costs and Data service costs will be needed to find a basis to allocate these costs correctly.<br><br>This approach could be simplified if instead of breaking down assets into separate components, they can be revalued in a modular manner saving time and still using the indexation method on a group of items instead of one by one. Also direct valuation could be used to mitigate the rapid change in technology. Concessionaires would wish to discuss the use of multiple methods of valuations in terms of differing types of asset life in use presently. | **Categorization of assets**<br><br>The LRAIC methodology attributes costs to services as a two stage process. First costs are attributed to network elements through a combination of: direct allocation of specific costs; cost volume relationships for indirect costs and; mark ups for common costs. The second stage allocates network element costs to services through routing factors.<br><br>For the purpose of costing CATV networks appropriate network elements, which reflect the structure of CATV networks, will be used. The attribution of costs of these network elements to the multiple services that use the network will take into account the relative impact of each service on the cost of the network element. This will typically be based on the relative bandwidth reserved/utilized by each service.<br><br>**Revaluation methods**<br><br>Indexation can be used for groups of assets where the assets |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| Revaluation Methods (continued) | | an analog plant and a digitized plant so a mixture of revaluation methods may be needed.<br><br>Where an asset class includes a number of different cost elements, for example labor and material costs a separate index should be used to revalue each component (or a weighted average of two or more indices may be used). In Columbus Communications Case a lot of assets and expenses have an attribute of equipment and another of labor cost .This convergence of attributes may make the process of cost separation a more difficult process than it should be. This concern is both for capital items as well as expensed items | This method of separation would be lengthy because all asset categories as at this time have extensive amounts of labor and material costs closely entwined in the statutory general ledger now. Allowance for using these amalgamated costs as they are in the asset registered is advocated to facilitate speed of CCA adoption | within that group share similar characteristics in terms of technological change and price trends.<br><br>Applying an index to the total cost of an asset may be justified where no reliable data is available on the split of equipment and labour costs. However, concessionaires would need to provide sufficient evidence that this is the case. TATT may recommend a split between equipment and labour costs based on international and local benchmark data. |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| p. 10 **Network Assets**<br>The Authority requires that all concessionaires provide CCA based cost estimates for all their fixed assets used in the provision of fixed and mobile services in TT. These fixed assets must be submitted in the cost categories | TSTT | In Annex 4, the Authority proposes to split assets into for high-level categories: mobile network components, fixed network components, network infrastructure assets, and non-network (support) infrastructure assets. For most of the assets, the Authority proposes the use of AUS TPI indexation as a method for revaluation of these assets. The Authority acknowledges that AUS TPI is prepared for six different geographic regions of the United States; however, it has not specified which of these specific regions should be used in Trinidad and Tobago. | The Authority should specify how it proposes that AUS TPI indexation be implemented. | There are six different geographic regions of the United States covered by the AUS TPI indices:<br>▫ North Atlantic<br>▫ South Atlantic;<br>▫ North Central;<br>▫ South Central;<br>▫ Plateau; and<br>▫ Pacific Coast).<br>For tradable equipment we would not expect a significant divergence between the movements in the indices and as such we would not expect the choice of index to have a material impact on the results. These indices represent the costs faced by operators in those regions which consist of equipment and other inputs purchased both locally and internationally. Based on geographic proximity we propose to use the 'South Atlantic' index. |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| established by the Authority for each network. | | | | |
| p.10 **Support Equipment** The Authority requires that all concessionaires provide CCA based cost estimates for support equipment used in the provision of fixed and mobile services. This equipment should be identified separately for each network. | TSTT | Authority proposes to require that CCA based cost estimates for support equipment used in the provision of fixed and mobile services be provided. Examples of these support equipment are: motor vehicles, computers, office machines, and property. These are assets used widely throughout the economy and are in no way specific or unique to telecommunications. In the cases of motor vehicles, computers, and office machines, these are assets with relatively short service lives as well. A CCA revaluation of these support assets would be costly and would provide, at most, only a minimal improvement in aligning cost estimates to the underlying economic value of the assets. | TSTT recommends that the Authority not require that CCA based cost estimates for support equipment be provided. | Given that the proposed method of revaluation is indexation and an appropriate index is likely to be publicly available, it is unlikely that it will be either costly or time consuming for concessionaires to revalue these assets. Revaluation of these assets may not lead to significant changes for assets with relatively short asset lives and/or assets that represent a relatively small proportion of total capital costs. However, for assets such as buildings and land with longer economic lives and which represent a higher proportion of costs, revaluation may lead to significant changes. |
| p.11 **Retail** | TSTT | TSTT agrees with the Authority that Retail | TSTT agrees. | Noted. |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| **Cost**<br>The Authority does not require that all concessionaires provide CCA based cost estimates for assets solely supporting the retail activities of concessionaries. | | Costs should not be subject to CCA. | | |
| Section 2.1 Cost Exclusions | Windward | Consideration should be given to the exclusion of capital expenditures which have (a) not been placed in service; or (b) have not been justified by the carrier on the basis of demand in the following year. Absent the conduct of any capital expenditure reviews Windward is concerned that prebuilding of broadband network infrastructure outlays could dramatically inflate the price of providing | | The Authority will attempt to identify any inefficiencies in investment and/or operations by the concessionaires as part of the costing exercise.<br>The Authority notes, however, that it may be efficient for concessionaires to build capacity ahead of demand even when demand is uncertain. For example, when installing a DSLAM in the broadband network it may be more efficient to install more capacity than may be needed straight away than it is to install one with a smaller capacity and then add |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| | | POTS and thus international termination rates, if not allocated on a causal cost basis | | or upgrade capacity as demand increases. Further, market conditions are such in Trinidad and Tobago that it takes a relatively long time to provision and order equipment. |
| p.11 **Cost exclusions**<br>The Authority shall exclude all costs that contravene the principles outlined in the Costing Methodology. The Authority shall therefore exclude the costs associated with stranded assets and fully depreciated assets. | TSTT | Stranded assets and Deregulatory Takings.<br>Stranded costs refer to the sum of all assets and liabilities whose book value exceeds market value. The AMPS and TDMA technologies could be two examples of stranded assets in the mobile industry. If a mobile operator is still operating any of those technologies it is very likely that they worth less on the market than it is on its balance sheet.<br><br>Another example of stranded assets would be TSTT's public payphones. According to roll-out obligations TSTT has had to deploy infrastructure all over the country including public payphones. However, wireless telephony has substantially diminished the demand for public payphones due to substitution in consumption patterns. The decline of public payphones demand in favor of wireless telephony is a phenomenon observed in Trinidad and Tobago as well as many other countries. However, TSTT still has the obligation of continuing operating public | The Authority should include in TSTT's cost base those historic stranded costs caused by implicit and explicit obligations that TSTT had to incur in order to comply with its regulatory contract. | Under the costing methodology (see "The costing methodology for the communications sector", TATT, 29 May 2008), TATT outlined that costs which "may or may not be included" in the LRAIC calculation include stranded assets and sunk costs. In determining whether or not these costs should be included in the LRAIC cost basis, TATT will be mindful of efficiency considerations. In particular, the underlying purpose of LRAIC modelling is to determine the costs that would be incurred by an efficient operator on a forward looking basis. Setting prices based on LRAIC allows the recovery of long run marginal costs – not just short run costs. |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| | | payphones even though its business justification would indicate otherwise. It would constitute a deregulatory taking not to recognize past investments and current operating costs associated with TSTT's public payphones.<br><br>There are other examples of stranded costs that TSTT have incurred in the past and have been caused to comply with obligations under its concession contract, such as coverage, universal service, and quality of service obligations. TSTT has been required through roll-out obligations to invest in new facilities that were not necessarily economically justified but where failure to make such investments would have constituted a breach of TSTT's concession contract. Therefore, in TSTT's Base Cost estimates the Authority must recognize the higher costs associated with past investment decisions being enforced upon TSTT.<br><br>If the Authority does not allow TSTT to recover stranded costs caused by implicit and explicit obligations that TSTT had to incur to | | |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| | | comply with its regulatory contract, it would be imposing a deregulatory taking on TSTT. | | |
| **Section 3 – Calculating Gross Replacement cost** | | | | |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| p. 17 **Asset Revaluation**<br>The Authority requires that all concessionaires revalue their assets according to the criteria outlined in Table 3. As a result, the Authority requires all concessionaires to adopt the recommended revaluation approach for each cost category listed in Annex 4. | TSTT | Clarifications on price indexes.<br>The Costing Methodology indicated by the Authority states that the indexation method is the required and preferred approach. Thus Annex 4 shows the different assets that need to be revaluated using price indexes. The Authority recommends to rely mainly on price indexes particularly those coming from AUS Telephone Plant Indexes, which are specific for the USA. There are price indexes for six regions of the USA, so that there is a need of clarification of which of these set of indexes would be appropriate to use for a country such as Trinidad and Tobago.<br><br>NGN assets. There is a concern on the use of price indexes for assets related to next generation networks. TSTT has and will continue to be investing in assets of latest technology. TSTT is afraid that in these cases, the use of AUS TIP indexes would not be appropriate. Instead, TSTT believes that valuation of these NGN assets should be done by using actual prices paid by TSTT for those assets. An example of these assets would be IP switches that TSTT has acquired in the recent past since TSTT is migrating its infrastructure from the traditional circuit- | The Authority needs to detail how to use the AUS TPI price indexes in the asset revaluation.<br><br>TSTT believes that recent investments in NGN assets should be valued using actual prices paid by TSTT.<br><br>TSTT also needs flexibility to submit to the Authority a revaluation of an asset or set of assets using MEA estimation instead price indexation in those cases in which TSTT consider that the latter might be understating the true current value of an asset or set of assets. | Alternative valuation methodologies may be used by concessionaires where they can provide sufficient evidence to show that this is a more appropriate approach. In order to demonstrate that historic costs would be a suitable proxy, concessionaires would need to show that the asset was purchased relatively recently and that there have been no significant changes in the asset price since it was purchased, or that the impact would be immaterial. In the longer term it is unlikely that HCA will represent a good approximation and a change from HCA as a proxy to another methodology such as indexation could lead to a discontinuity in valuations and hence exceptional holding gains or losses. For this reason it will generally be more appropriate to apply CCA revaluations even where the HCA valuation is currently a reasonable proxy (see Annexe 4).<br><br>Compound indices may be necessary in order to reflect the part of asset costs accounted for by labour costs. In order to do this, concessionaires will need to be able to identify the proportion of asset costs accounted for by labour as this will be needed to determine the weights to use in the cost index.<br><br>See above for response on the choice of geographic region for the AUS TPI |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| | | switching to packet-switching technology.<br><br>Alternatively, suppose TSTT still have old digital switching. If TSTT has to revaluate those old existing digital switching systems it would be more appropriate to undertake a MEA estimation instead of using indexation since the equivalent asset would be IP switching equipment and because the old asset is not longer sold in the market. | | |
| | Columbus | The indexation concept as set cost out in this document seems a bit complicated and has a. disconnect from the actual real life application. The data sources section is easily understood. | Guidance in actual use of the indexation aspect of the current cost accounting model | Concessionaires may find the Excel data template provided as part of the consultation and described in Annex 3 instructive.<br>The Authority is currently considering the scope for |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| | | | | providing additional training in CCA and LRAIC principles to concessionaires. |
| 3.2 Data Sources | ICNTT | As in the LRAIC Specification paper, it is unclear why US based labour and other statistics are utilized to model market conditions when these are in fact inappropriate benchmarks to domestic economic changes. | | Where assets and inputs are locally procured, concessionaires may use indices specific to T&T where the relevant data is available. Where equipment are internationally traded, a US based index is likely to provide a reasonable proxy unless concessionaires can provide sufficient data to suggest otherwise. |
| **Section 4 – Step 3 – Calculate CCA Inputs** | | | | |
| | Columbus | It is unclear how the holding gains will be incorporated into the cost base. | Guidance in actual use of the holding gains and losses aspect in CCA Calculation. | Under CCA with financial capital maintenance, holding gains and losses form part of the annualized capital charges faced by concessionaires.<br><br>The annualized cost for assets will consist of three elements:<br>1. The CCA depreciation charge;<br>2. Holding gains and losses; and<br>3. The weighted average cost of capital is applied to the NRC to reflect the opportunity cost to investors of investing. |
| p. 23 **Capital maintenance** | TSTT | TSTT agrees with the Authority that the use of financial capital maintenance (FCM) | The Authority needs to implement a correct depreciation method, one that | Under the costing guidelines that TATT previously consulted on, the tilted straight line depreciation formula was |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| The Authority requires that all concessionaires use financial capital maintenance to calculate annual depreciation charges. As a result, holding gains and losses must be included within the cost base | | methodology is superior to operating capital maintenance (OCM) methodology when asset prices change.<br><br>However, there are other issues on the capital costs recovery that the methodology proposed by the Authority does not address properly. Since depreciation in costing calculations of telecommunication services amounts to an important share of total forward-looking economic costs, there is an obvious imperative to address it correctly.<br><br>The Authority guidelines ("The Costing Methodology for the Telecommunications Sector", 2008) require concessionaires to adopt the titled straight line depreciation method to proxy economic depreciation. According to the Authority, the two main approximations to economic depreciation are the "tilted straight line" and the "tilted annuity". Using a simple numerical example and a graph, the Authority concludes that the former approximates better to economic depreciation.<br><br>Economic depreciation is the change in the | would help it to approximate economic depreciation. Since asset price changes is just one possible source of variation of economic depreciation, and the tiltled annualization formula could deal with it, the correct formula must take account also other factors affecting depreciation such as reductions in output (for instance, coming from competition, technical obsolescence, etc) and increasing operating expenses associated with maintenance of assets.<br><br>The depreciation method suggested by the Authority could produce inconsistent depreciation estimations. Under a tilted annuity method the Authority portends to fix independently the asset price change and the asset lives. Strictly speaking the economic asset life is endogenously determined by different factors including a decline in the asset price. | stipulated. This form of depreciation is widely used in other top down LRAIC models and is considered to be a reasonable proxy for economic depreciation when considered in aggregate, across all assets. The application of the financial capital maintenance (FCM) concept means that TSTT fully recovers the costs of its assets.<br><br>It is far from clear that using sum of the years' digits which would result in the front loading of depreciation costs is a reasonable proxy for economic depreciation for individual assets or in aggregate. Using this approach would not take into account relative movements in asset prices and would also not address TSTT's concern that asset lives should be determined within the model.<br><br>While some approaches to estimating economic depreciation attempt to define asset lives endogenously, applying these complex formulations would not take account of the practical realities. In particular, such an approach would require a large amount of data and this would be burdensome for concessionaires and would be unlikely to provide an objective result that would be very different from alternative approaches. This is because the asset lives used for statutory and regulatory accounting purposes are set to reflect the useful economic lives of assets. Therefore, TATT proposes the asset lives as set out in Annexe 4 as these are based on |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| | | value of an asset during a specified period of time (i.e. one year). The market value of an asset is equal to the present value of the income that the asset is expected to generate over the remainder of its useful life. In telecommunications is common to observe that many assets exhibit a permanent decline in their prices. When an asset price declines, a "tilted annuity" approach could be used to approximate the true economic depreciation. But economic depreciation could be caused not just by asset price decline, but other circumstances. These other circumstances could be changes in the output from the asset (i.e. physical deterioration of the asset, technology obsolescence, loss of market share due to competition, etc) and/or changes in the operating costs associated to running the asset (i.e. assets may need more maintenance costs when they get older). If any of these factors occurs, then a "tilted annuity" approximation to economic depreciation will underestimate economic depreciation, so that TSTT will under recover its costs of assets, which in turn would disincentive TSTT's investments.<br><br>Therefore, a tilted annuity method | Alternatively the Authority could implement simple accelerated depreciation methods, such as the sum-of-the years' digits, in which the depreciation rate to be used is a fraction, of which the numerator is the remaining years of useful life and the denominator is the sum of the years of useful life. | international benchmarks which take account of the reasonable economic lives of assets. This approach also reduces the burden for concessionaires and provides a greater degree of transparency and objectivity. |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| | | underestimate economic depreciation since it fails to take account of the factors apart from price changes that affect the economic depreciation schedule.<br><br>Since the tilted annuity method alleviates only partially the causes that affect economic depreciation, there is a need to find out a better approach to capture economic depreciation.<br><br>One way to do it is to modify the tilted annuity to incorporate also output declines and increases in operation expenses related to assets. This could be easily accomplished adding adjustment factors in the basic tilted annuity formula.<br><br>For the asset revaluation estimation, the Authority is proposing to adopt specific ex – ante asset lives for the fixed and mobile network components (Annex 4 in CCA Document Reference Paper). However this could be inconsistent with the definition of economic depreciation. The economic life of an asset is determined by the future point in time at which revenue coming from the asset does not cover its operating costs, which could be | | |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| | | caused by several factors such as a decline of asset price, decline of output, lost of market share, etc. In its depreciation method proposal, the Authority will be choosing independently the asset live and the price change of the asset, which could give rise to an inconsistent result. More specifically, in a tilted annuity depreciation method, the selection of asset price changes and asset lives chosen independently would produce an inconsistent outcome. The fixing of depreciation rates at the outset means that whatever changes in technology takes place over the period the rate of depreciation would remain unaltered.<br><br>Another alternative is to implement other simple accounting methods that contemplate accelerated depreciation such as sum-of-the years' digits, in which the depreciation rate to be used is a fraction, of which the numerator is the remaining years of useful life and the denominator is the sum of the years of useful life. For example, an asset with a life of 3 years would have a sum of years of 3+2+1 = 6. Accordingly, the proportion to depreciation schedule would be: 3/6 or 50% | | |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| | | in the first year, 2/6 or 33% in the second year and 1/6 or 17% in the third year. | | |
| **Section 5 – Step 4 – Reconciliation** | | | | |
| | Columbus | Will the concessionaire's historical accounting format be maintained in this reconciliation process? In other words, will the concessionaire need to change the format that it presents its historical accounts to facilitate the requested reconciliation | Guidance needed from TATT in the practical operation of this reconciliation process | The CCA reference paper and LRAIC specification paper do not mean that concessionaires will be required to change the way in which they report their historical accounts. |
| p.27 **Reconciliation of CCA study with Statutory Accounts** The Authority requires that all concessionair | TSTT | As expressed before, the development and implementation of a CCA system would require first the development and implementation of a Historical Cost Accounting system based on the line of business (services) that the Authority would indicate to TSTT.<br><br>The Authority has not presented a cost-benefit analysis for its intended regulatory intervention (accounting separation system.) Operators | The Authority needs to implement a cost-benefit analysis of the regulatory measures it intends to impose on the operators. | Under the Telecommunications Act, concessionaires are required to provide access to their networks and interconnection at charges that reflect underlying costs. The need for a cost model was also identified as part of the first interconnection dispute between TSTT and Digicel in which the Arbitration Panel recommended that "the Authority consider developing a sector specific cost model for the purposes of considering whether proposed charges comply with the regulatory framework or for setting charges if so required." |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| es demonstrate how the HCA input costs included in the CCA study reconcile with their statutory accounts. Concessionaires shall document how the CCA outputs obtained are consistent with the profit and the loss statements in the consolidated separate accounts on the main business areas. | | would be compelled to hire international consultants and to dedicate internal resources to develop a current accounting system. On the benefits side the Authority needs to ask itself if based on international experiences accounting separation systems have been an effective tool of regulation. The evidence shows that in cases of anti competitive accusations, accounting systems have rarely been used as instrumental proof of costs. And for pricing purposes the evidence does not favor accounting systems either. Regulators are focusing in estimating costs of specific wholesale services instead of trying to measure costs for regulated and not regulated services. | | The approach proposed for T&T reflects the resource constraints faced by concessionaires. In particular the methodology does not require the significant resources required to conduct direct or MEA valuations for the purposes of Current Cost Accounting. |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| **ANNEX 4** | | | | |
| Table 11 Asset Life | Windward | The asset life of an International Switch Centre (12 years) and a VOIP softswitch (5 years) are too divergent and are incongruous with the 10 year asset life accorded a Mobile Switching Centre. In the Trinidad instance VOIP switches are used by the dominant carrier to provide international switching | | The asset lives proposed by TATT are based on international experience of asset lives used for regulatory and statutory accounting purposes in the Caribbean (Bahamas, OECS, Cayman, Jamaica and T&T), Europe, Australia and by the World Bank.<br><br>The asset life for an MSC ranges from 5 years (ECTEL LRIC model) to 10 years (LRIC models in Cayman and the UK). TATT considers that 10 years is a reasonable asset life for MSCs and this is consistent with the asset lives for other similar assets (such as BTSs and BSCs). |
| Table 13 Asset Life | Windward | Windward suggests that the asset life of a Prepaid service platform software, billing system, customer management systems and interconnect billing is far longer than 5 years. In practice, the core billing platform is upgraded on an ongoing basis approaching 8-10 years | | Benchmark asset lives for billing systems in Norway, ECTEL and Guernsey indicate that 5-6 years is a reasonable asset life for the prepaid service platform software, billing system, customer management systems and interconnect billing.<br><br>There may be differences in asset lives for different assets which perform similar functionality, in the case quoted IP-based and TDM equipment used to provide International Gateway functionality. This should not adversely affect the results of the costing model and better reflects the economic life of the different assets. As networks converge to similar IP-based technology, these differences |

| Document Sub-Section | Submission Made By: Stakeholder Category[15] | Comments Received | Recommendations Made | TATT's Decisions |
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| | | | | should be reduced. |

# Annexe 5: Decisions on recommendations – second round

The following summarizes the comments and recommendations received from stakeholders on the second draft of the CCA Reference Paper (dated December 2009), and the decisions made by TATT as incorporated in the revised document (dated March 1, 2010).

| Document Sub-Section | Submission Made By: Stakeholder Category[19] | Comments Received | Recommendations Made | TATT's Decisions |
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| **General** | | | | |
| General 1.1 – 3.1 | Columbus | It would be appreciated for TATT to provide concessionaires with a more face-to-face forum to air difficulties, which may present themselves as we move towards the February 2010 deadline .This is still an outstanding issue that a definite solution has not been presented by the authority in its analysis of the submitted recommendations and comments by relevant concessionaires. It has been expressed by the authority that it is currently considering the scope for providing training in the principles and implementation of CCA and LRAIC. This is of concern as no concrete solution has been put forward. | Guidance is requested from TATT on how the CCA will work in reality and this can be done by facilitating the concessionaires with an intense hands on training session using data from the relevant concessionaire in question to show exactly how some of the more complex issues with the implementation and operation of the CCA & LRAIC models can and will be sorted out in actuality and not only theoretically as it is represented in your guidance notes. | TATT notes the difficulties that Columbus envisages that it will face in completing the data requests.<br>TATT will provide a more detailed CCA and LRAIC data request. This will consist of Excel files and detailed practical guidance on how to prepare the data required. In particular, the written guidelines contain details of data sources that can be used (for example, the fixed asset register, general ledger, network engineering department, publicly available sources and so on).<br>TATT will provide the opportunity to concessionaires to meet with TATT staff and its consultants in order to discuss the data collection process. TATT staff will also be able to support concessionaires in the data collection process on an ongoing basis. |

[19] Regional regulatory or Governmental agencies, Existing service and/ or network provider and affiliates, Potential service and/ or network providers and affiliates, Service/ Network Provider Associations/ Clubs/ Groups, General Public

| Document Sub-Section | Submission Made By: Stakeholder Category[19] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| General | Columbus | It is commendable that the telecommunications authority is seeking to make competition in the telecommunications industry equitable, but it should be noted that it is difficult to identify and measure all of the shifts in demand and cost causation involved in instigating competition let alone to forecast them in advance. It is understood that involved in the regulatory issue in the establishment of the LRAIC & CCA comes down to the question of cost definition, cost measurement, cost allocation and cost recovery. It is hoped by Columbus that the authority provides hands on training sessions or avenues to air concerns directly. | Guidance is requested from the TATT on how the CCA will work in reality and this can be done by facilitating the concessionaires with an intense hands on training session using data from the relevant concessionaire in question to show exactly how some of the more complex issues with the implementation can and will be sorted out in actuality and not only theoretically as it is in TATT's guidance notes. | |
| General | TSTT | TSTT welcomes the opportunity to respond to the Authority's second round consultation on the Current Cost Accounting Reference Paper. Whilst in this response TSTT chooses not to rehash its previous comments, this does not necessarily mean TSTT agrees with the Authority's position as articulated in its response.<br><br>TSTT is also pleased to note that the Authority is open to and, indeed, has welcomed further discussions on various aspects of the cost | No recommendation made. | No response required. |

| Document Sub-Section | Submission Made By: Stakeholder Category[19] | Comments Received | Recommendations Made | TATT's Decisions |
|---|---|---|---|---|
| | | model development; this TSTT believes would auger well for the development of a cost model that is transparent and reflective of an efficient operator. In addition, TSTT is pleased to know that the Authority has considered and decided to hold a separate consultation on the efficiency of concessionaires.<br><br>In this response TSTT's comments are centered on the Asset lives presented in Table 10. | | |
| **Section 5** | | | | |
| 5.1 Reconciliation with statutory accounts | Columbus | The CCA model will be populated on an annual basis covering each concessionaire's financial reporting year. The model will initially be populated with data for the latest financial reporting year at that point. There will be no requirement to populate the model for earlier time periods. This statement made by the authority answers questions posed by Columbus about information from previous accounting periods being requested but raises another issue in the verification of data submitted by concessionaires. Will the services of external auditors be needed for verification | Clarification on how the information from the concessionaire will be verified. It is suggested that verification should done on a case by case basis and not by a generic method seeing that the concessionaire group is heterogeneous in nature. | External auditors will not be required to verify the data submitted by concessionaires. This is because TATT recognizes that this would be very costly to concessionaires and would not be proportionate.<br><br>TATT proposes to verify the inputs used in the LRAIC model on a case by case basis. TATT has no expectation that the data submitted by concessionaires should be identical since TATT recognizes that concessionaires face a variety of operating conditions. However, we would expect there to be some consistency between some of the data submitted. For example, we would expect unit labour costs and unit vehicle costs to be broadly similar.<br><br>TATT also proposes to verify that the magnitude of |

| Document Sub-Section | Submission Made By: Stakeholder Category[19] | Comments Received | Recommendations Made | TATT's Decisions |
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| | | of information and if so will the authority bear the expense or the concessionaire. | | information supplied is broadly in line with international experience.<br>In future years, TATT will compare the data submitted by concessionaires in previous years as we would not expect there to be very significant changes unless concessionaires are able to give objective explanations. |
| **Annexe 4– Asset lives** | | | | |
| Table 10 Asset lives | TSTT | Remote Switching Unit – 15yrs<br>Digital Local Exchange – 15yrs<br>Digital Tandem Exchange – 15yrs<br>International Switch Center – 12yrs<br>TSTT notes that these asset types carry extended lives contrary to the economic reality these assets face. These assets are currently confronted with technological obsolescence and any new entrant purchasing equipment today would be faced with economic lives significantly lower than those proposed by the Authority. Also suppliers are no longer supporting these types of exchanges (DMS) which directly affect the productive capacity, and thus the economic lives, of the exchanges. | TSTT recommends that the Authority reduce the proposed lives of these assets to reflect the economic reality faced by a new entrant. The following are suggested:<br>Remote Switching Unit – 7yrs<br>Digital Local Exchange – 7yrs<br>Digital Tandem Exchange – 7yrs<br>International Switch Center – 5yrs | TATT proposes to not make any changes to the recommended asset lives for three main reasons.<br>TATT believes that the proposed asset lives are reasonable since they are based on recent publicly available benchmarks from a range of jurisdictions.<br>TATT notes that TSTT has not provided any objective justification for using alternative asset lives (for example, evidence from its statutory accounts that it uses the asset lives it proposes). TATT also notes that other concessionaires have not requested such reductions. |