



Consultative Document

Fees and Charges Structure

Re: Network Concessions, Service Authorisations and Resource Licences for the Provision of Telecommunications & Broadcasting Resources (network and/or service) in Trinidad and Tobago

Table of Contents

MAINTENANCE HISTORY	4
1 INTRODUCTION.....	5
1.1 MODIFICATION TO DOCUMENT	5
1.2 THE CONSULTATION PROCESS	5
2 EPA COMPLIANCE	7
2.1 IMPACT OF EPA	7
2.2 CLASSIFICATION OF AUTHORISATIONS	8
2.3 FEE OBJECTIVES.....	9
2.4 FEES FOR CONCESSIONAIRES AND AUTHORISED SERVICE PROVIDERS.....	10
2.5 LICENCE FEES FOR USE OF SPECTRUM AND NUMBERS	11
2.6 REGULATORY CHARGE	11
2.6.1 Administrative Charge.....	11
2.6.2 Operating Charge.....	12
2.7 USAGE CHARGES	13
2.7.1 Spectrum Usage Charge.....	13
2.7.2 Number Usage Charge	14
2.8 SOCIO-ECONOMIC & CULTURAL WELFARE	14
3 GENERAL FORMULA: REGULATORY CHARGE FOR CONCESSIONS OR SERVICE AUTHORISATIONS.....	15
3.1 FORMULA RE: ADMINISTRATIVE CHARGE	16
3.2 DERIVATION OF OPERATING CHARGE.....	17
4 GENERAL FORMULA: REGULATORY CHARGE FOR LICENCES FOR THE USE OF SPECTRUM.....	20
4.1 FORMULA RE ADMINISTRATIVE CHARGE PER LICENCE FOR USE OF SPECTRUM	20
4.2 FORMULA RE OPERATING CHARGE PER LICENCE FOR USE OF SPECTRUM.....	22
4.3 PROPORTION OF REGULATORY (ADMINISTRATIVE AND OPERATING) EXPENSES ALLOCATED TO LICENCES FOR THE USE OF SPECTRUM	23
5 GENERAL FORMULA: REGULATORY CHARGE FOR LICENCES FOR THE USE OF NUMBERS 24	24
6 METHODOLOGY: SPECTRUM USAGE CHARGES.....	25
6.1 FREQUENCY CHARACTERISTICS	25
6.2 SPECTRUM USAGE CHARGE PRINCIPLES	27
6.3 SPECTRUM USAGE CHARGE (GRADE 1 SPECTRUM)	28
6.4 GENERAL FORMULA: SPECTRUM USAGE CHARGE FOR GRADE 1 SPECTRUM	30
5.4.1 Determination via Auction Process	30
6.4.2 Determination via Benchmarking	32
6.5 GENERAL FORMULA: LICENCE FEES FOR GRADE 2 SPECTRUM	34
6.6 SPECTRUM USAGE CHARGE FOR GRADE 3 & 4 SPECTRUM	37
7 METHODOLOGY: NUMBER USAGE CHARGES	38
8 METHODOLOGY: TOTAL FEES AND ASSOCIATED CHARGES FOR A LICENCE FOR THE USE OF SPECTRUM OR NUMBERS.....	38

8.1	TOTAL FEES AND CHARGES FOR THE USE OF SPECTRUM	38
8.1.1	Grade 1 & 2 Spectrum:.....	38
8.1.2	Grade 3 & 4 Spectrum:.....	39
8.2	TOTAL FEES AND CHARGES FOR THE USE OF NUMBERS	39
9	GLOSSARY.....	40
10	APPENDIX I: CLASSIFICATION OF SPECTRUM.....	41
11	APPENDIX II: TELECOMMUNICATIONS SPECTRUM USAGE CHARGE METHODOLOGY- INTRODUCTION OF A DISCOUNTING METHOD FOR THE RE-USE OF FREQUENCIES BY A POINT-TO-POINT STATION LICENSEE.....	42
11.1	INTRODUCTION.....	42
11.1.1	Background.....	42
11.1.2	Purpose	43
11.1.3	Objectives.....	43
11.2	FREQUENCY RE-USE METHODOLOGY.....	43
11.2.1	Considerations	43
11.2.2	Descriptions	45
11.3	CALCULATION EXAMPLE.....	46
11.3.1	Point-to-Point Station Licence.....	46
11.3.2	STL Station Licence	47
11.3.3	VSAT-Telecommunications Station Licence.....	48
	ANNEX I: DECISION ON RECOMMENDATIONS.....	50

Maintenance History		
Date	Change Details	Version
April 8, 2005	Initial Draft	0.1
May 20, 2005	McCarthy Tétrault commentary	0.2
June 14, 2005	Revised Draft	0.3
September 27, 2005	Revisions made based on comments and recommendations received from the first consultation phase.	0.4
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March 3, 2006	Final version published	1.0
January 4, 2012	Revised Document - issued for public consultation	1.1
August 2014	Revised Document – based on first round of public consultation and review for EPA compliance	1.2

1 Introduction

This document establishes a fees and charges structure comprising methodologies and formulae to determine authorisation and licence fees in respect of the provision of telecommunications and broadcasting resources (network and/or services) in the Republic of Trinidad and Tobago.

This document also seeks to incorporate the regime associated with the adoption of the obligations stipulated in applicable articles of the Economic Partnership Agreement (EPA) signed in 2013 between the CARIFORUM States and member countries of the European Union. This agreement describes the negotiated trade partnership for sustainable development between entities and such applicable articles affecting the telecommunications and broadcasting sectors are further discussed below.

1.1 Modification to Document

As the country's telecommunications industry matures, the fee methodology will evolve. The Fee Methodology will be reviewed and modified as necessary and in consultation with stakeholders and the public, to ensure that regulatory practices and processes continue to be guided by appropriate policy guidelines and objectives. This document represents the second round of consultation to the revised Fee Methodology since its first publication consultation round in November 2011.

Questions or concerns regarding this document may be directed to the Authority at info@tatt.org.tt

1.2 The Consultation Process

In 2005, the Fee Structure document underwent two rounds of public consultation. Realizing the importance of revising the document since its initial drafting in 2005, the Authority updated the content in 2011 to reflect the current changes in the telecommunications and broadcasting

sectors. The revised document was then issued for consultation in accordance with the ‘Procedures for Consultation in the Telecommunication Sector of Trinidad and Tobago’.

Based on the comments received from the first consultation round, further changes were made to the document.

The first round of consultation on this revised document occurred in November 2011. Pursuant to this first round of consultation, the comments received were reviewed and the consultative document was further revised.

Additionally, revisions were made to the first consultative document to incorporate compliance with Article 96 of the EPA, which addresses the country’s obligations with respect to authorisation of providers of telecommunications service

This modified document will therefore be published for a second round of consultation allowing stakeholders to express their views with regard to the revised methodology and in keeping with the Authority’s consultation procedures.

Interested parties can access the Authority’s consultation procedures and comment submission form on the Authority’s website, <http://www.tatt.org.tt>.

Comments should be submitted on or before to info@tatt.org.tt or mailed to:

Telecommunications Authority of Trinidad and Tobago
#5, Eighth Avenue Extension,
Off Twelfth Street,
Barataria,
Trinidad and Tobago

2 EPA Compliance

2.1 Impact of EPA

Applicable conditions of the EPA, specific to the telecommunications sector are covered in Section 4, Articles 94 to 102 of the EPA.

Given this larger context, Article 96 of the EPA addresses the country's obligations with respect to authorisation of providers of telecommunications service. Article 96 states:

- “1. Provision of services shall, as much as possible, be authorised following mere service authorisation.*
- 2. A licence can be required to address issues of attributions of numbers and frequencies. The terms and conditions for such licences shall be made publicly available.*
- 3. Where a licence is required:*
 - a. all the licensing criteria and a reasonable period of time normally required to reach a decision concerning an application for a licence shall be made publicly available;*
 - b. the reasons for the denial of a licence shall be made known in writing to the applicant upon request;*
 - c. the applicant of a licence shall be able to seek recourse before an appeal body in case a licence is unduly denied;*
 - d. licence fees required by the EC Party or by the Signatory CARIFORUM States for granting a licence shall not exceed the administrative costs normally incurred in the management, control and enforcement of the applicable licences.”*

(EPA Article 96)

It is worth noting here, that although the above articles of the EPA speak specifically to telecommunications services, the authorisation regime proposed in the revised Authorisation Framework of Trinidad and Tobago dated applies universally to both the telecommunications and broadcasting sectors in accordance with a policy position of a converged telecommunications and broadcasting space. This position is not unique, and is in fact in accordance with emerging industry trends, as governments and regulators around the world seek to simplify their authorisation procedures in light of an ever converging ICT environment. This process, however, usually calls for drastic reforms in a country's relevant legislations, specifically those pertaining to the authorisation of ICT providers and the fees paid accordingly. The case of Trinidad and Tobago is no different and required amendments to its

Telecommunications Act¹, which makes provisions for the new requirements under the EPA. Thus, this document, to ensure parallel coherence to an EPA compliant authorisation framework, will also seek to make prescriptions to the fee regime as required by the Act to facilitate industry wide adherence to applicable stipulations of the EPA.

As such with the passing of the EPA Act, necessary amendments were made to the classifications of authorisations² granted by the Authority and subsequent regulatory documents of the Authority including the Fee Charges and Structure.

2.2 Classification of Authorisations

Consequently, in the revision of its Authorisation Framework, the Authority amended the classifications of authorization to include the following:

1. Network Concession: Required for the operation of a public telecommunications and/ or broadcasting networks
2. Service Authorisation: Required for the provision of public telecommunications and/ or broadcasting services
3. Resource Licence: Required for the installation, operation and/ or use of scarce telecommunications resources; i.e. spectrum used by radiocommunication services or radio-transmitting equipment, or telecommunications numbers.

Accordingly, the Fee and Charges Structure document reflects the above classifications in the development of its methodology.

¹ Reference to revised Telecommunications Act dated

² The classification of authorisations are described in detail within the Authority's Authorisation Framework for Telecommunications and Broadcasting Services in Trinidad and Tobago www.tatt.org.tt

2.3 Fee Objectives

The part of the fee and charges structure relating to concessions is predicated, in the main, on section 3 of the Telecommunications Act Chapter 47:31 (hereinafter referred as the Act) which mandates the Authority to create a regulatory environment that, inter alia:

- a) Encourages fair competition;
- b) Facilitates orderly development of a telecommunications and broadcasting sector that serves to safeguard, enrich and strengthen the national social, cultural and economic wellbeing of the society;
- c) Promotes and protects public access to telecommunications and broadcasting services;
- d) Protects end users' right to quality and variety of services;
- e) Encourages provider investment in telecommunications and broadcasting infrastructure and services; and
- f) Compliance with multi-lateral or bi-lateral treaties and/or agreements.

The fee and charges structure for concessions and service authorisations are reflective of section 52 (2) (a) to (c) of the Act which guides the charging methodology of the Authority to recovery of costs incurred:

- a) for its operation and administration; and
- b) to provide services to authorised providers.

The structure for licence fees and associated usage charges for the use of spectrum and numbers are in accordance with the requirements of Sections 41 and 44 of the Act, respectively, which states:

“The Authority shall regulate the use of spectrum in order to promote the economic and orderly use of frequencies... and to recover the cost incurred to manage the spectrum” and

“The Authority shall develop a plan known as the National Numbering Plan for the numbering of public telecommunications networks and services and shall administer and manage such numbers including requiring the payment of fees and require information from authorised providers as prescribed by the Authority for allocation, re-allocation, assignment and re-assignment of such numbers.”

It follows that the fee and charges structure for authorisations should result in charges which:

- a) Ensure that the costs of the Authority are recovered;
- b) Reflects the market value of spectrum and numbers, where applied, used in a manner which:
 - (i) encourages investment and offers end users reasonable prices for quality resources,
 - (ii) ensures ubiquitous access to telecommunications and broadcasting resources in the country; and
- c) Does not place unreasonable barriers to entry into the market by businesses and entrepreneurs.

2.4 Fees for Concessionaires and Authorised Service Providers

Concessions are granted by the Minister in accordance with section 21 of the Act and are provided for the operation of a public telecommunications and or broadcasting network. Service Authorisations are approved by the Authority pursuant to an application from a potential public telecommunications or broadcasting service provider. Both concessions and service authorisations are classified in the Authorization Framework for the Telecommunications and Broadcasting Sectors of Trinidad and Tobago.

The fee for concession or service authorisation shall comprise a specified Regulatory Charge which is the proportion of the Authority's total administrative and operating costs allocated to each concession/service authorisation. These fees are calculated and levied annually based upon each authorised provider's proportion of industry revenues.

2.5 Licence fees for Use of Spectrum and Numbers

Licences are granted by the Authority in accordance with section 36 of the Act and are classified in the Authorisation Framework. The licence fee shall comprise a specified Regulatory Charge that equates to the administrative costs normally incurred in the management, control and enforcement of the applicable licences.

2.6 Regulatory Charge

The purpose of the Regulatory Charge is to ensure the recovery of the costs of managing the Authority as required by the Act. To this end the Authority conducted a comprehensive cost assessment and classified its annual expenses into administrative and operating costs. Accordingly, the Regulatory Charge comprises:

- (a) an Administrative Charge, the proportion of the total expenses of the Authority specific to the administration of authorisations which is allocated to each concession, service authorisation and licence;
- (b) an Operating Charge, the proportion of the total operational expenses of the Authority allocated to authorisations by concession or service authorisation only. The methods for determining the applicable proportions to be paid by these authorised providers are discussed later on.

The Regulatory Charge is calculated on an annual basis. The allocation of Regulatory expenses amongst authorised providers is tabulated at Table 2 of this document.

2.6.1 Administrative Charge

The Administrative Charge is a percentage of the total administrative cost of the Authority in a fiscal year. The administrative cost comprises all activity-based annual expenses incurred by the Authority to regulate concessions, service authorisations and licences under its jurisdiction. Such expenses include, but are not limited to:

- a) Preparation and review of policies, regulations, procedures, forms and all other documents relating to the Authority's operations;

- b) Processing of concession, service authorisation and licence applications, including publication in the gazette and daily newspapers;
- c) Investigating complaints of authorised providers and resolving disputes;
- d) Establishing and maintaining the financial system for assessment and collection of concession, service authorisation and licence fees;
- e) Purchase of books, periodicals and training material to aid efficient management of authorised providers;
- f) Investigations, monitoring and other activities relating to the management of spectrum and numbering resources.
- g) Capital projects required for the conduct of the Authority's functions.
- h) Research and Development.
- i) Any other related expenditure.

2.6.2 Operating Charge

The Operating Charge is a percentage of the total operating costs of the Authority in a fiscal year. Operating cost consists of annualized capital and recurrent expenses of the Authority that are not directly attributable to the administration of any single concessionaire, or authorised service provider. Such expenses include but are not exclusive to:

- a) Rent
- b) Board emoluments
- c) A portion of staff emoluments not apportioned to licences and concessions
- d) Building maintenance contracts
- e) Office equipment, furniture and other materials
- f) Transport cost
- g) Utilities
- h) Training
- i) Courier services
- j) Communications, public relations and promotions
- k) Other legal expenses
- l) Internal policies and procedures

- m) Other human resource and finance costs
- n) Insurance
- o) Other goods and services

2.7 Usage Charges

In addition to licence fees levied by the Authority to recover its costs for the management of spectrum and administration of numbers, a usage charge will also be levied, consistent with the economic value and efficient use of the resource. In accordance with Sections 43 of the Act, a spectrum usage charge shall be levied to promote the efficient use and maintain the economic value of spectrum. Additionally, in accordance with Section 44 of the Act, a number usage charge shall be levied to promote the economic and orderly utilisation of numbers.

2.7.1 Spectrum Usage Charge

The Spectrum Usage Charge is derived from the estimated market value of the spectrum based on its use.

In a competitive environment the market is the mechanism through which a fair price (market price) of a resource is established. The market price of a resource usually reflects, inter alia, its economic rent or the opportunity cost; either is contingent on the degree of scarcity and substitutability of said resource. The economic rent is the actual or indicative value attached to a resource by its most efficient or potentially most efficient user. The opportunity cost indicates the highest foregone return from the use of a resource. Both concepts are crucial to investment decisions and efficient usage of spectrum resources, as required under the Act. In satisfying section 43 of the Act, market valuation of spectrum will be applied to each licence premised on promoting economic utilization of frequencies.

2.7.2 Number Usage Charge

The Number Usage Charge shall not be applied at this time. Pursuant to demand analysis based on the liberalized marketplace, the Authority shall formulate a methodology and associated charges for approval, in accordance with the Authority's 'Procedures for Consultation in the Telecommunication Sector of Trinidad and Tobago'.

The Authority shall only levy a numbering fee (via an activity-based cost assessment) for the use of numbers until such time that a number usage charge methodology is developed.

2.8 Socio-Economic & Cultural Welfare

The Regulatory Charges (i.e. Concession fees, service authorisation fees or licence fees) and usage charges (i.e. spectrum usage charges and number usage charges) levied for telecommunications and broadcasting services must strike a delicate balance between market values, on one hand, and ubiquity, affordability (in particular, persons disadvantaged by health and economic circumstances) and cultural development on the other. This enjoins the Authority to ensure that concession, service authorisation and licence fees do not redound in end user fees which are inimical to nationwide access to the services.

3 General Formula: Regulatory Charge for Concessions or Service Authorisations

Concession fee per annum, F_c applicable to a concessionaire, c ($c = 1$ to M) is equal to the Regulatory Charge, RC_c specific to that concessionaire, i.e.:

$$\begin{aligned} F_c &= RC_c \\ &= \alpha_c + \beta_c \end{aligned}$$

Where:

α_c = the Administrative Charge for a concessionaire ; and

β_c = the Operating Charge for a concessionaire

Similarly, the service authorisation fee per annum, F_n applicable to an authorised service provider,, n ($n = 1$ to M) is equal to the Regulatory Charge, RC_n specific to that authorised service provider, i.e.:

$$\begin{aligned} F_n &= RC_n \\ &= \alpha_n + \beta_n \end{aligned}$$

Where:

α_n = the Administrative Charge for an authorised service provider ; and

β_n = the Operating Charge for an authorised service provider

3.1 Formula Re: Administrative Charge

The Administrative Charge relative to a concessionaire c , α_c is derived through the formula:

$$\alpha_c = [(TR_{c,t-1}/TR_{t-1}) * TAC_t]$$

Where:

t = the current calendar year

TR_{c,t-1} = total revenue (telecommunications and/or broadcasting networks) earned by the concessionaire, c in year $t-1$

TR_{t-1} = total revenue of the telecommunications and broadcasting networks in the country in year $t-1$

TAC_t = total administrative cost of the Authority budgeted related to concessions for year t .

Similarly, The Administrative Charge relative to a service authorisation n , α_n is derived through the formula:

$$\alpha_n = [(TR_{n,t-1}/TR_{t-1}) * TAC_t]$$

Where:

t = the current calendar year

TR_{n,t-1} = total revenue (telecommunications and/or broadcasting services) earned by the authorised service provider, n in year $t-1$

TR_{t-1} = total revenue of the telecommunications and broadcasting services in the country in year $t-1$

TAC_t = total administrative cost of the Authority budgeted related to authorised service provider for year t .

For example, the administrative charge for a concessionaire, α_c , assuming:

$$TR_{c,t-1} = \$200\,000\,000$$

$$TR_{t-1} = \$2\,000\,000\,000$$

$$TAC_t = 20\,000\,000$$

The Administrative charge liability of concessionaire c, is:

$$\alpha_c = (200\ 000\ 000/2000\ 000\ 000)*20\ 000\ 000 \\ = \$ 2\ 000\ 000$$

NOTE: Where a provider is authorized for telecommunications networks and services and/or both broadcasting networks and services, total revenue shall be taken together in the determination of the relevant fees for concession(s) and service authorisation(s).

3.2 Derivation of Operating Charge

The Operating Charge relative to the concessionaire c, β_c is derived through the formula:

$$\beta_c = [(TR_{c,t-1}/TR_{t-1}) * TOC_t]$$

Where:

- t** = the current calendar year
- TR_{c,t-1}** = total revenue (telecommunications and/or broadcasting networks) earned by the concessionaire, c in year t-1
- TR_{t-1}** = total revenue of the telecommunications and broadcasting networks in the country in year t-1
- TOC_t** = total operating cost of the Authority budgeted related to concessions for year t.

Similarly, The Operating Charge relative to a service authorisation n, β_n is derived through the formula:

$$\beta_n = [(TR_{n,t-1}/TR_{t-1}) * TOC_t]$$

Where:

- t** = the current calendar year
- TR_{n,t-1}** = total revenue (telecommunications and/or broadcasting services) earned by the authorised service provider, c in year t-1
- TR_{t-1}** = total revenue of the telecommunications and broadcasting services in the country in year t-1
- TOC_t** = total operating cost of the Authority budgeted related to authorised service provider for year t.

NOTE: Where a provider is authorized for telecommunications networks and services and/or both broadcasting networks and services, total revenue shall be taken together in the determination of the relevant fees for concession(s) and service authorisation(s).

The allocation of TATT's Regulatory Expenses towards administrative and operating charges, as a percentage of TATT's annual budget, will be tabulated as shown in Table 2 below, for example.

Table 1: Example of the Allocation of TATT's Regulatory Expenses

Components of Regulatory Expenses	Proportion of Total Regulatory Expenses
1. Concessions & Service Authorisations³	52.55 %
1.1. Administrative Expenses	27.60 %
1.2 Operating Expenses	24.95 %
2. Licences	47.45 %
2.1. Administrative Expenses	23.49%
2.2. Operating Expenses	23.97 %

The Authority has undertaken a thorough activity-based cost allocation exercise from which the allocation of administrative expenses amongst concessions, service authorisations and licences and operational expenses between concessions and service authorisations will be derived in each year. The current allocation is shown in Table 2.

NOTE: the Authority shall undertake an allocation exercise annually before levying fees.

Regulatory expenses have been attributed to concessions, service authorisations and licences based on expected demands that each category will place on the resources of the Authority in a given year.

³ Regulatory Expenses related to Notifications have not been calculated, as such Notifications have been made.

In respect of concessions and service authorisations, the regulatory expenses are allocated to the respective authorised service provider in proportion to its share of the total sector revenues. This reflects the fact that the time and resources the Authority required in respect of a particular provider is proportionate to that its activity within the sector and consequently its share of the revenues.

4 General Formula: Regulatory Charge for Licences for the Use of Spectrum

The Regulatory Charge for a particular category of licence for the use of spectrum is the sum of the applicable administrative charges (fixed and variable). These charges are arrived at by allocating the total expenses relating to licences to categories in accordance with table 4 below and dividing each by the expected number of licences in each category.

Therefore, Regulatory Charge for a licence for the use of spectrum, RC_L applicable to any licence for use of spectrum is:

$$RC_L = \varepsilon_1 + \eta_1$$

Where:

ε_1 = the applicable Administrative Charge

η_1 = the applicable Operating Charge

NOTE: In order to encourage investment and development of the sector, in the current period the Authority has not imposed a regulatory charge on those category of licences for which its administrative expenses are fully recovered by the Spectrum Usage Charge (see Section 7) and in the Authority's opinion the total fee would otherwise be a deterrent to investment.

Effectively, where a spectrum usage charge is levied for the use of specified spectrum, the Authority shall **NOT** levy a licence fee as well.

4.1 Formula Re Administrative Charge Per Licence for Use of Spectrum

The Administrative charge per licence ε_1 is derived using the formula:

$$\varepsilon_1 = \frac{TAEI_i}{N}$$

Where:

N = number of licences in the sub-category at Table 3 where the licence, i is classified;

TAE_{li} = total expenses incurred by the Authority to administer all licences in the category where licence i is classified at Table 3.

$$\mathbf{TAE_{li}} = \pi_i(\mathbf{TAE_l})$$

Where:

π_i = the proportion of total administrative expenses of the Authority allocated to all licences within the category where licence 'i' is classified

TAE_l = the proportion of total administrative expenses of the Authority allocated to all categories of licences

$$\text{i.e.: } \mathbf{TAE_l} = (\mathbf{TAE} - \mathbf{TAE_{cn}})$$

Where:

TAE = the total administrative expenses of the Authority

TAE_{cn} = total administrative expenses allocated to all concessions and service authorisations

For example, assuming that

- i. authorization has been granted to thirty five (35) broadcast licences in 2005;*
- ii. the total administrative expenses estimated of the Authority to administer licences over the fiscal year 2005-2006 (year $t+1$) is six (6) million dollars of which 40% is allocated to concessions and 60% to licences;*
- iii. 25% of the administrative expenses allocated to licences is sub-allocated to broadcast licences.*

The Administrative charge per broadcast licence

$$\begin{aligned}\epsilon_{l \text{ broadcast}} &= [0.25(0.6*6\,000\,000)]/35 \\ &= \$25\,741\end{aligned}$$

4.2 Formula Re Operating Charge Per Licence for Use of Spectrum

The Operating charge per licence η_1 is derived using the formula:

$$\eta_1 = \frac{\text{TOE}_{li}}{N}$$

Where:

N = number of licences in the sub-category at Table 3 where the licence, i is classified;

TOE_{li} = total expenses incurred by the Authority afforded to its operation in the category where licence i is classified at Table 3.

$$\text{TOE}_{li} = \pi_i(\text{TOE}_l)$$

Where:

π_i = the proportion of total operating expenses of the Authority allocated to all licences within the category where licence 'i' is classified

TOE_l = the proportion of total operating expenses of the Authority allocated to all categories of licences

$$\text{i.e.: } \text{TOE}_l = (\text{TOE} - \text{TOE}_{cn})$$

Where:

TOE = the total operating expenses of the Authority

TOE_{cn} = total operating expenses allocated to all concessions and service authorisations

4.3 Proportion of Regulatory (Administrative and Operating) Expenses Allocated to Licences for the Use of Spectrum

In respect of licences for the use of spectrum, the regulatory expenses (which comprise administrative and operating expenses) will be attributed to licence categories as illustrated in Table 3, as an example, based on the demands that each category is expected to place on the resources of the Authority in the following year.

Table 2: Example of Regulatory Expenses Allocation Matrix

Licence Category	% of Total Administrative Expenses	% of Total Operating Expenses
Land Mobile – Spectrum	8.04%	8.04%
Amateur Stations	2.80%	2.80%
Maritime Stations	2.62%	2.62%
Aeronautical Stations	2.62%	2.62%
Point to Multipoint – Spectrum	2.43%	2.43%
Satellite Earth Stations – VSAT	2.24%	2.24%
Point to Point	2.06%	2.06%
Land Mobile – Station	2.06%	2.06%
Point to Multipoint – Station	1.87%	1.87%
Cellular Mobile	1.50%	1.50%
Broadcasting Radio (FM) National or Major Territorial	1.50%	1.50%
SCADA – Spectrum	1.12%	1.12%
FM Radio STL's – Station	1.12%	1.12%
FM Radio Outside – Spectrum	1.12%	1.12%
Broadcasting TV-UHF Niche or Minor Territorial	1.12%	1.12%
Broadcasting TV-VHF National or Major Territorial	0.93%	0.93%
Broadcasting TV-VHF Niche or Minor Territorial	1.12%	1.12%
Satellite Earth Stations	1.12%	1.12%
TV Outside Broadcasts - Spectrum	1.12%	1.12%
TV STL's – Station	1.12%	1.12%
SCADA – Station	0.93%	0.93%
Broadcasting Radio (FM) Niche or Minor Territorial	0.93%	0.93%
Broadcasting TV-UHF National or Major Territorial	0.93%	0.93%
Satellite Earth Stations – TVRO	0.93%	0.93%
Shared Spectrum	0.93%	0.93%
Spread Spectrum	0.93%	0.93%
Special Events	0.56%	0.56%

5 General Formula: Regulatory Charge for Licences for the Use of Numbers

The Regulatory Charge for a particular category of licence for the use of numbers is the sum of the applicable administrative charges only. These charges are arrived at by allocating the total administrative expenses relating to licences to categories in accordance with table 4 below and dividing each by the total capacity of numbers in the particular category.

Therefore, Regulatory Charge for a licence for the use of numbers, C_{Ni} , applicable to any licence for use of numbers is defined by the following formula:

$$C_{Ni} = [(\alpha_i + \beta_i).T_c]/Cap_{Ni}$$

Where,

$$\alpha_i = \alpha .d_i$$

$$\beta_i = \beta .v_i$$

α = 0.5 and is the portion of the total administrative cost allocated based on the demand of a particular type of number.

β = 0.5 and is the portion of the total administrative cost allocated based on the value of a particular type of number based on revenues generated.

d_i = the percentage of numbers allocated to a particular number type.

v_i = the percentage of revenues generated by a particular number type.

C_{Ni} = the cost of administration allocated to one number of a particular type.

Cap_{Ni} = the total capacity of a particular type of number.

T_c = the total administrative cost of the Authority for Numbering.

i = f, m and s for fixed, mobile and special types of numbers respectively.

6 Methodology: Spectrum Usage Charges

In addition to the Licence fees payable for the use of spectrum, spectrum usage charges shall also be levied for the use of spectrum.

6.1 Frequency Characteristics

Frequency application and use are determined by the propagation capability in the frequency range; the higher the frequency, the lower the distance propagation capability. Generally, higher frequencies are associated with signals that have higher information carrying capacity than lower frequencies.

Invariably, where signals for particular services can be effectively transmitted by both low and high frequencies, because of economics, the lower frequencies are preferred. In the circumstances, the UHF band 300–3000 MHz which is suitable for transmission of signals for a wide variety of services is in great demand in almost all countries.

Table 4: Spectrum Allocation Table

Frequency	Band	General Use	Range	Mode
9-30 KHz	VLF	Long/ distance radio	Several 1000 km	Waveguide
30 - 300 KHz	LF	Long range radio navigation and communication.	Several 1000 km	Ground-wave Sky-wave
0.3-3MHz	MF	Medium range point-to-point broadcasting and maritime mobile	A few 1000 km	Ground-wave Sky-wave
3-30 MHz	HF	Short and long range point-to-point broadcasting, mobile.	Up to several 1000 km	Sky wave
30-300 MHz	VHF	Short and medium point-to-point mobile, LAN, broadcasting (sound & TV) personal communications.	Up to a few 100 km	Space wave , tropospheric scatter diffraction.
0.3-3GHz	UHF	Short and medium	Less than	Space wave ,

Frequency	Band	General Use	Range	Mode
		point-to-point mobile, LAN, broadcasting (sound & TV) personal communications, satellite communications.	100 km	tropospheric scatter diffraction, line of sight
3-30 GHz	SHF	Short and medium point-to-point mobile, LAN, broadcasting (sound & TV) personal communications, satellite communications	Less than 30 km	Line of sight
30-300 GHz	EHF	Short range point-to-point, micro cellular, LAN, personal communications, satellite communications, B/band Wireless	Less than 20 km	Line of sight
Above 300 GHz	Not currently designated			

In terms of use of spectrum, public mobile services (cellular) are assigned the following bands: 704 – 716 MHz, 728 – 758 MHz, 776 – 788 MHz, 824-849 MHz, 869-894 MHz, 1880-1910MHz and 1930-1960MHz. Broadband wireless access services are assigned spectrum in the 698 – 704 MHz, 716 – 728 MHz, 2.3 – 2.36 GHz, 2.5 – 2.69 GHz, 3.4 – 3.6 GHz and 12.2 – 12.7 GHz. Private land mobile operators (trunk radio etc) use the 138-144MHz, 148-156MHz, 158-174MHz, 400-470 MHz and 846-869MHz spectrum bands. Private maritime services (large and small vessels) use the 156 MHz and sub-30 MHz frequencies. Satellite services (earth stations and VSAT) are restricted to the 4GHz, 6GHz, 11.9 GHz and 14.5 GHz frequencies. The details of frequency use for broadcasting are the following: FM broadcasting, 88-108MHz, AM Broadcasting, 610KHz-730KHz, television broadcasting, 55-88MHz, 174-216MHz and 470-806MHz. Fixed terrestrial services (FM/TV STLs, point to point etc) are assigned to the 225-267 MHz, 440-460 MHz, 890-913MHz, 930-960 MHz, 1.7-2.2 GHz, 6.5-7.2 GHz and 1.429 GHz spectrum bands.

6.2 Spectrum Usage Charge Principles

As stated previously, the use of spectrum requires the payment of a Licence fee and an associated spectrum usage charge. In order to determine the spectrum usage charge the following principles tabularized below were developed:

Table 3: Spectrum Classification & Valuation Principles

Spectrum Grade	Grading Criteria	Scarcity Determination Factor	Typical Assignment	Spectrum User Charge Principle
Grade 1	Scarce	Demand > Available Spectrum	Public Telecommunications or Broadcasting networks and services.	Derivation of economic rent or opportunity cost of band used.
Grade 2	Demand Sensitive	Demand \approx Available Spectrum	Public Telecommunications or Broadcasting Services. Closed User Group Services.	Proxy of market value of the band based on proportion of value of Grade 1 spectrum, potential earnings and demand with adjustments for efficient use of spectrum.
Grade 3	Non-scarce	Demand < Available Spectrum	Personal, Safety-of-Life, Public Health and Safety (non-commercial private radiocommunications service).	Spectrum Usage Charge equates to a value that is minimal or near zero. As a result, only a cost recovery charge can be levied.
Grade 4	Reserved	Reserved	National Security purposes, national emergency services and diplomatic missions.	No Spectrum Usage charge levied up to the quantum the Authority deems necessary for efficient spectrum use. As a result, only a cost recovery charge can be levied.

The diagram in Appendix I illustrate the above spectrum classifications as it pertains to the frequency spectrum bands that are currently assigned for use. The Spectrum Usage Charge for frequencies used mainly for commercial purposes are contingent on the economic value of the

spectrum and the purpose for which, and manner in which the spectrum is used. These factors may vary depending on the peculiarities of frequency bands. As shown at the table above, Grade 1 spectrum is likely to yield the highest economic rent because of scarcity. Grade 2 spectrum, though not scarce, has a marginal utility greater than zero when used for commercial purposes. Grade 3 spectrum has an estimated marginal utility of the asymptote of zero. Grade 4 spectrum is reserved for specific national obligations including, but not exclusive to, national security activities, national health and safety and national emergency services. A detailed spectrum classification table is at Appendix I.

6.3 Spectrum Usage Charge (Grade 1 Spectrum)

All Spectrum Usage Charges applicable to Grade 1 spectrum will be determined by market-based mechanisms. One market-based mechanism for determining Grade 1 spectrum usage charge are Auctions, which may take various forms, including:

1. **English Auction:** the auctioneer increases the price until a single bidder is left.
2. **First-price Sealed-bid Auction:** involves submission of sealed bids of which the highest bidders win.
3. **Second-priced Sealed-bid Auction:** bidders submit sealed bids, the highest bidder is selected but pays the bid price of the second highest bidder.
4. **Dutch Auction:** the auctioneer starts at a very high price which is reduced until a bidder shouts “mine”.
5. **Simultaneous Multiple-round Auction:** involves multiple rounds of bidding for a number of blocks of spectrum that are offered simultaneously. The highest bid on each lot is revealed to all bidders before the next round when bids are again accepted on all blocks. The identity of the highest bidder may or may not be revealed after each round but is revealed at the close of the auction. The process continues until a round occurs where no more bids are submitted on any block.

Auction is the main spectrum pricing or assignment mechanism in cases where demand for a particular block of spectrum exceeds supply. An auction awards use of specific blocks of spectrum to the highest bidder/s. This is construed as equivalent to the highest market value or the economic rent of the spectrum.

The result of an auction is also an efficient indicator of the opportunity cost of a resource. Opportunity cost is the second best differential utility of a resource as determined by the next most efficient user. Since the value of spectrum must be managed and determined in a manner that ensures efficient utilization of the resource, methodologies that capture economic rent and/or opportunity cost serve as useful tools in setting spectrum usage charges in oversubscribed bands. Like all natural resources, e.g. oil, auction is a manifest of optimal commercial exploitation of spectrum in that:

- a) a well-designed auction identifies the users with the highest marginal utility of the resource and who are likely to generate highest economic benefits;
- b) it is a transparent and fair system of allocation since the market sets the price of the spectrum; and
- c) it is fair to new market entrants whenever the license fee of the old entrants for using the same resource is adjusted in accordance with that derived via auction.

The Authority has employed an auction process for the assignment of spectrum for the provision of both cellular mobile services and Broadband Wireless Access (BWA) services. All auction processes were first preceded by a pre-qualification of suitable applicants, in which interested parties submitted proposals based on a Request for Proposal process. Pre-qualified applicants were then eligible to participate in the auction process. The auction process for cellular mobile services comprised a simultaneous multi-round ascending auction for a minimum (5 MHz) block of spectrum in the 850 MHz and 1900 MHz bands, followed by a combinatorial round that allowed Bidders to bid for preferred blocks. This auction utilized software in order for it to be conducted online. The auction was completed within a day.

The second and third auction processes which were both for BWA services, in the Lower 700 MHz, 2.3 GHz, 2.5 GHz and 12 GHz bands. A similar auction process was adopted for these two

auctions. The first stage of the auction was a simultaneous multi-round ascending auction for a minimum block of spectrum in the respective bands, followed by a ranking of Bidders, where the highest ranked Bidder got first preference to its preferred spectrum blocks. These two latter auctions were paper-based, and they were completed in one (1) day.

The Authority will continue to employ a process of pre-qualification, followed by auction, in the assignment of Grade 1 spectrum. Where the spectrum usage charge has already been set by the most recent auction held for a radiocommunications service, the Authority may use that charge in the determination of the spectrum usage charge for this service.

6.4 General Formula: Spectrum Usage Charge for Grade 1 Spectrum

5.4.1 Determination via Auction Process

The Authority has employed two formulae thus far for the calculation of spectrum usage charges from the winning bids of the previous auctions for Grade 1 Spectrum.

6.4.1.1 Cellular Mobile Spectrum Usage Charge

The cellular mobile auction rules articulated that the **winning bid(s)** would set the total (i.e. 10 year) spectrum usage charge associated with that category of licence for the use of spectrum, payable by the respective **winning bidder(s)**. In year one (1) of licence period, the liability of the **winning bidder** was twenty-five (25) percent of the value of the **winning bid**. For the remaining nine (9) years of the Licence term, the spectrum usage charge per annum applicable thereafter to the **winning bidder**, S_{uc} was derived by the formula:

$$S_{uc} = \frac{0.75 AF(1 + i)^{n-1}}{n - 1}$$

Where:

AF = the total amount of the **winning bid** made by the **winning bidder**;

n = the anniversary year of the licence period (i.e. from year 2 to 10 of the 10 year licence period); and

- i = is a rate of interest agreed between the Authority and the winning bidder to facilitate instalments on the *winning bid*.

A Spectrum Usage Charge per MHz pair, S_{ucp} , was derived from the total spectrum usage charges payable for the 10 year licence period for the *winning bidders* over the total quantum/bandwidth of spectrum awarded to the *winning bidders*.

This S_{ucp} was applied as the S_{ucp} for the remaining cellular mobile spectrum in the 800 MHz, 1800 MHz and 1900 MHz bands and it was used in the calculation of the incumbent cellular mobile operator's annual spectrum usage charges, based on the quantum/bandwidth of cellular mobile spectrum assigned to the incumbent

6.4.1.2 Broadband Wireless Access Services Licence Fee

A more straight-forward approach was employed to set the annual licence fee from the spectrum auctioned for BWA services. It was articulated in the BWA auction rules that the winning bid from the first and second BWA auctions will set the spectrum usage charges per annum for a minimum block of spectrum in the respective bands (i.e. Lower 700 MHz, 2.3 GHz, 2.5 GHz and 12 GHz bands). The total spectrum usage charges per annum payable by a *winning bidder* would therefore be summated by the number of blocks of spectrum awarded to that *winning bidder*. Consequently, a Spectrum Usage Charge per MHz, S_{ucp} , was calculated using the following formula in order to derive the spectrum usage charges per annum for the remaining spectrum in the respective bands, inclusive of the incumbent operators:

$$S_{ucp} = \sum_{p=1}^{p=m} \frac{TS_{Ap} * TAF_p}{TS_{At}}$$

Where:

S_{ucp} = Spectrum Usage Charge per MHz for specified radiocommunications service;

m = total number of specified bands auctions for specified radiocommunications service;

TAF_p = Total Spectrum Usage Charge per annum for specified band 'p' auctioned for

radiocommunication service;

TSA_p = Total Spectrum Auctioned for specified band 'p'; and

TSA_t = Total Spectrum Auctioned for all bands for specified radiocommunications service.

The Spectrum Usage Charge per annum for incumbent operators in the 2.3 GHz and 2.5 GHz BWA bands (not participating in the auction) would then be calculated as follows:

$$S_{uck} = S_{ucp} (B_{wj})$$

Where:

S_{uck} = Spectrum Usage Charge per annum for Grade 1 Spectrum assigned to incumbent operator in specified band 'k';

S_{ucp} = Spectrum Usage Charge per MHz for specified band 'k'; and

B_{wk} = total quantum/bandwidth of spectrum assigned to incumbent operator in specified band 'k'.

6.4.2 Determination via Benchmarking

Benchmarks may serve as a proxy for the determination of spectrum usage charges, either as a short-term measure between auctions conducted by the Authority, or as a longer-term method for assessing the value of spectrum, where necessary. In either case the benchmark should be constructed in such a manner that it does provide a reasonable approximation of spectrum usage charges levied by other countries. The Authority may use different approaches as appropriate on a case by case basis, however, the principal form of benchmarking is a comparison of spectrum usage charges for the equivalent service in other countries.

The following approach outlines the process that the Authority may follow with respect to benchmarking⁴:

⁴ Adopted from the Authority's Costing Methodology http://www.tatt.org.tt/ddocs/Costing_Methodology_final.pdf
This document presents a comprehensive Benchmarking Process which may be adopted by the Authority on a case by case basis.

- Step 1: Choose the services for which a benchmark is required;
- Step 2: Choose the countries for the benchmark against which spectrum usage charges are to be compared. The operating environments should be as similar as possible to Trinidad & Tobago in key economic and demographic indicators, such as GDP per capita, teledensity, population density and urbanisation, as these will be an indication of similar demand and valuation of spectrum as Trinidad & Tobago. To create a robust benchmark it is usually advisable to have at least 8 operators in the benchmark set.

Malta is an example of one country which uses benchmarking in the valuation of its spectrum.

The Administration in Malta does not have any cost accounting system. spectrum usage charges are benchmarked to those set by other European Administrations and adjusted to reflect the local economic situation.

Malta is in the process of restructuring administrative charges and spectrum usage charges in accordance with measures set out in the new EU package.

6.5 General Formula: Licence fees for Grade 2 Spectrum

Grade 2 Spectrum is defined as that not having premium market value as determined by effective demand and commercial value. Since demand for all Grade 2 spectrum is not the same, pricing cannot be based on a mechanism of equivalence. Neither is there a set economic science in establishing the matrix of market values that attend the different frequency bands identified as Grade 2 spectrum.

Taking the above into consideration in determining the economic value of Grade 2 Spectrum, a proxy was established from the last auction for a specified radiocommunications service. In addition to this proxy, a coefficient for this proxy, based on a scarcity factor and an opportunity cost factor, was deduced for each radiocommunications service in its respective frequency band . When considering the scarcity factor, the demand for the spectrum, the number of licences or potential licences granted as well as the substitutability of the band for use by another radiocommunications service were all taken into account. The opportunity cost factor focused on the potential use of the band by the specified radiocommunications service, in order to determine the cost benefits to be derived from use of the spectrum by that radiocommunications service and the opportunities that would exist should such spectrum be made available for alternative use.

The general formula for Spectrum Usage Charge per MHz pair, S_{ucj} , for Grade 2 spectrum in a specified band 'j', for a specified radiocommunications service in that band is:

$$S_{ucj} = \mu (K_{smj})(A_{smj})$$

Where:

K_{smj} = The Spectrum Usage Charge per MHz pair, S_{ucp} , derived from the last auction for a specified radiocommunications service;

A_{smj} = Sum of Efficiency factors for a specified band 'j'; and

μ = is a ratio that represents the difference in economic value between the radiocommunications service that applies to K_{smj} to that of the radiocommunications service to be determine in band 'j'.

NOTE: A reasonableness test was applied to the final ‘ $\mu (K_{smj})$ ’ value, based on the typical B_{wj} for a specified radiocommunications service, in order to mitigate against a resultant licence fee that is exceedingly prohibitive to the use of the service.

It should be noted that,

$$A_{smj} = \sum_{i=1}^5 F_i$$

The factor, F_i comprises the following variables:

F_1	<p>= frequency re-use discount factor for point-to-point, STL and VSAT station Licensees only. The following methodology shall be employed:</p> <p>(i) The annual spectrum usage charge (100%) to be applied to the first assignment of a specified simplex frequency or frequency pair to a station licensee.</p> <p>(ii) 75% of the annual spectrum usage charge to be applied to the second assignment of the same specified simplex frequency or frequency pair to the same station licensee (i.e. the first re-use of the specified simplex frequency or frequency pair by the same station licensee).</p> <p>(iii) 50% of the annual spectrum usage charge to be applied to the third and subsequent assignments of the same specified simplex frequency or frequency pair to the same station licensee (i.e. the second and subsequent re-uses of the specified simplex frequency or frequency pair by the same station licensee).</p> <p>A detailed documentation of the methodology for the discounting factor for point-to-point station Licensees can be found in Appendix II.</p>
F_2	<p>= value sensitivity coefficient based on the location of use for access spectrum (niche =0.5; otherwise=1)</p>

F_3	= percentage by which radial distance is < maximum technical specifications as set out by the Authority.
F_4	= percentage by which EIRP is < maximum technical specifications as set out by the Authority.
F_5	= percentage by which beam-width is < maximum technical specifications as set out by the Authority.

NOTE: F_2 , F_3 , F_4 and F_5 are discount factors incentives to encourage efficient use of spectrum. F_3 , F_4 and F_5 will be applied by the Authority based on the degree of adherence to the technical specifications in the relevant spectrum plans. Until such time as the Authority prescribes a framework for determining the values of F_2 , F_3 , F_4 and F_5 in the relevant spectrum plans, their values will be equal to 1.

Therefore, the spectrum usage charge per annum for Grade 2 Spectrum LF_{2j} in a specified band 'j', for a specified radiocommunications service in that band is therefore:

$$\begin{aligned}
 LF_{2j} &= S_{ucj}(B_{wj}) \\
 &= K_{smj} (A_{smj})(B_{wj}) \\
 &= K_{smj} \left(\sum_{i=1}^5 F_i \right) (B_{wj})
 \end{aligned}$$

NOTE: The discounting factors included in A_{smj} shall only be applicable for licence terms/durations of one (1) year or greater.

6.6 Spectrum Usage Charge for Grade 3 & 4 Spectrum

Grade 3 Spectrum does not attract a Spectrum Usage Charge as this spectrum is not considered to be in demand. Therefore, the payment made for the use of this spectrum shall be based on a cost recovery mechanism that apportions the Authority's administrative and operating expenses related to licences for each category of radiocommunications service. This equates to the relevant regulatory charge, **RC_L**.

7 Methodology: Number Usage Charges

As stated previously, the Number Usage Charge shall not be applied at this time. Pursuant to demand analysis based on the liberalized marketplace, the Authority shall formulate a methodology and associated charges for approval, in accordance with the Authority's 'Procedures for Consultation in the Telecommunication Sector of Trinidad and Tobago'

8 Methodology: Total Fees and Associated Charges for a Licence for the Use of Spectrum or Numbers

8.1 Total Fees and Charges for the Use of Spectrum

The total payment made by a License for the use of spectrum shall be the sum of the appropriate licence fee and the associated spectrum usage charges, as stated in the following formula:

8.1.1 Grade 1 & 2 Spectrum:

$$\mathbf{TFC_1 = S_{ucj} (B_{wj}) + RC_L}$$

Where:

$\mathbf{TFC_1}$ = Sum of the Annual Licence fees and associated Spectrum Usage Charges;

$\mathbf{S_{ucj}}$ = Spectrum Usage Charge per MHz for specified band 'j';

$\mathbf{B_{wj}}$ = total quantum/bandwidth of spectrum assigned to Licensee in specified band 'j';
and

$\mathbf{RC_L}$ = total annual regulatory charge associated with the use of the spectrum in the specified band 'j'.

Therefore,

$$\mathbf{TFC_1 = S_{ucj} (B_{wj})}$$

8.1.2 Grade 3 & 4 Spectrum:

$$\mathbf{TFC_1 = S_{ucj} (B_{wj}) + RC_L}$$

Where:

$\mathbf{TFC_1}$ = Sum of the Annual Licence fees and associated Spectrum Usage Charges;

$\mathbf{S_{ucj}}$ = Spectrum Usage Charge per MHz for specified band 'j';

$\mathbf{B_{wj}}$ = total quantum/bandwidth of spectrum assigned to Licensee in specified band 'j';
and

$\mathbf{RC_L}$ = total annual regulatory charge associated with the use of the spectrum in the specified band 'j'.

NOTE: In this instance, the spectrum usage charges equate to zero, i.e. $S_{ucj} = 0$. Hence, only the total annual regulatory charge shall apply for the use of this spectrum.

Therefore,

$$\mathbf{TFC_1 = RC_L}$$

8.2 Total Fees and Charges for the Use of Numbers

Considering that a number usage charge would not be applied at this time for the use of numbers, the total payment made by a License for the use of numbers shall be the regulatory charge.

9 Glossary

Commercial Radiocommunications Service means a wireless telecommunications or broadcasting radiocommunications service provided to the general public or to closed-user group and private entities for purposes of direct or indirect economic gain.

Non-commercial Radiocommunications Service means a wireless telecommunications or broadcasting service provided to the general public or to closed-user group and private entities without intent or realization of direct or indirect pecuniary gain.

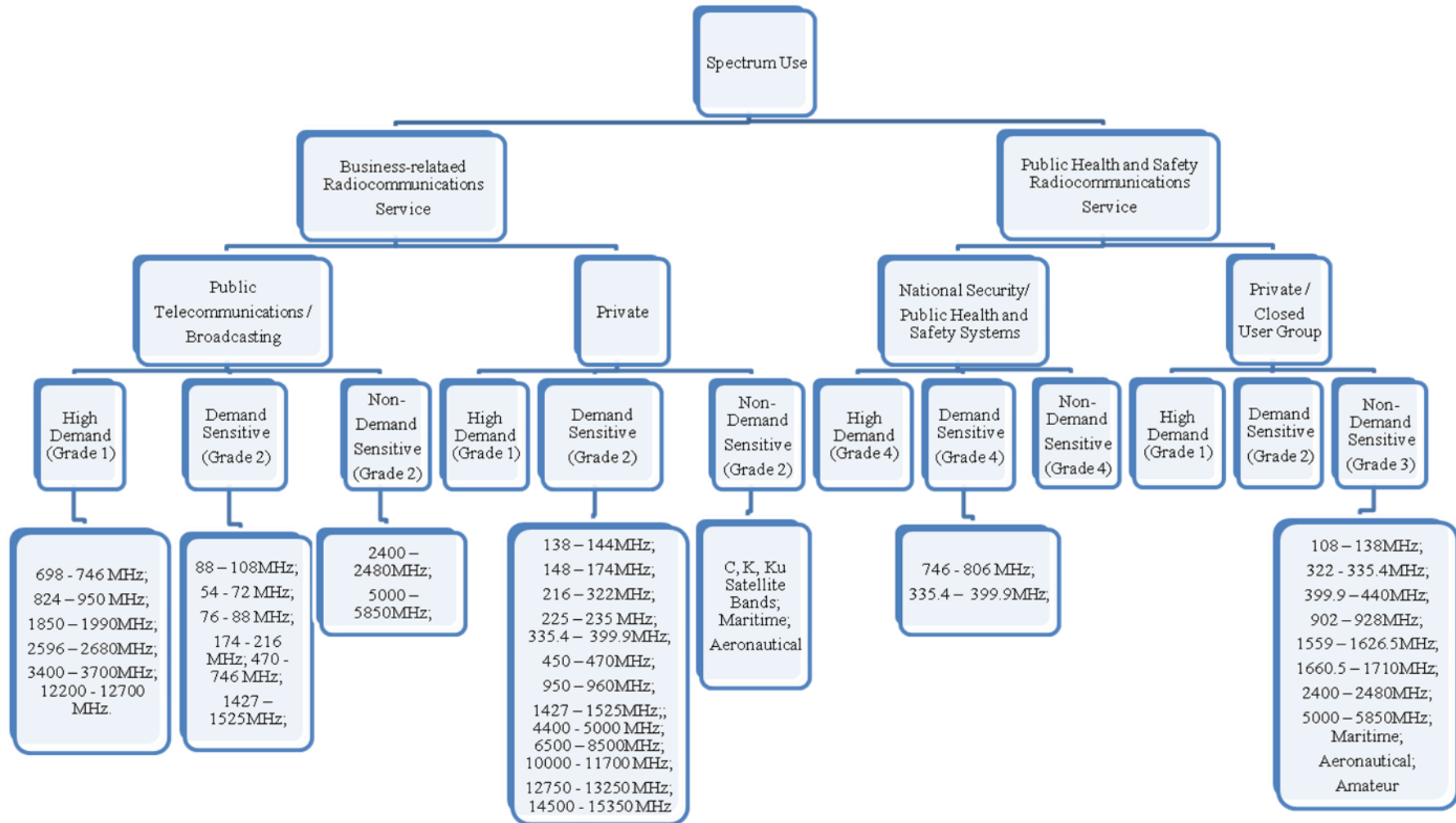
High-Demand Sensitive Frequency Band means a frequency band which is scarce or is in high demand for either public or private use on an exclusive or limited basis.

Demand Sensitive Frequency Band means a frequency band which is not scarce, but is used for either public or private use on an exclusive or limited basis.

Low-Demand Sensitive Frequency Band means a frequency band which is either not in high demand for exclusive use, or is used on a shared basis.

10 Appendix I: Classification of Spectrum

Figure 1: Classification of Spectrum



11 Appendix II: Telecommunications Spectrum Usage Charge

Methodology- Introduction of a Discounting Method for the Re-use of Frequencies by a Point-to-Point Station Licensee

11.1 Introduction

11.1.1 Background

The Authority has employed the principle of spectrum efficiency in its approach to spectrum management, inclusive of the spectrum usage charges that shall be remitted to the Authority by licensees, in order to maximize the use of this finite telecommunications resource. The existing spectrum usage charge methodology creates an incentive to use spectrum more efficiently by calculating licence fees based on spectrum usage, which is a function of the number of frequency pairs and bandwidth per pair. This implies to the higher the spectrum usage, the higher the licence fee, and vice versa. This method mitigates spectrally inefficient practices such as spectrum hoarding by creating an incentive whereby it would be in the best financial interest of the licensee to use the quantum of spectrum that is needed, as opposed to the quantum it wants.

Greater spectrum efficiency can be attained by the re-use of frequencies. However, the spectrum usage charge methodology currently does not provide an avenue to translate the re-use of a frequency into a reduced spectrum usage charge or any further incentive to the licensee. Frequency re-use can be employed in point-to-point radiocommunications systems, for example, as an assigned frequency can be re-used in two or more point-to-point links in the system, based on different geographical locations and other characteristics of the radiocommunications equipment. The re-use of frequencies in this manner reduces the total number of discrete frequencies that needs to be assigned to the system at specific geographical locations, whilst maintaining the total spectrum usage required by the radiocommunications system. This in turn makes more discrete frequencies available to other potential licensees, thereby achieving greater spectrum efficiency.

11.1.2 Purpose

This position paper seeks to outline a licence fee methodology that can be employed to afford station licensees a further pecuniary incentive/gain to use spectrum more efficiently. This methodology provides a reduction in total licence fees for frequencies that are re-used in a radiocommunications system. This reduction in total licence fees applies primarily, but not limited to, licensees of point-to-point, Very Small Aperture Terminals (VSATs) and Studio-to-Transmitter Link (STL) radiocommunications systems that have been station licensed. This discount methodology *only* applies to station licences where a spectrum usage charge is levied.

11.1.3 Objectives

The objectives of this position paper are as follows:

- To create a further pecuniary incentive for persons / companies to use spectrum more efficiently;
- To recommend a method to allow a licensee that re-uses an assigned frequency in its radiocommunications system to receive a discount on its spectrum usage charge payable to the Authority.

11.2 Frequency Re-use Methodology

11.2.1 Considerations

The frequency re-use methodology was developed taking into consideration the following:.

- 11.2.1.1 Frequency re-use is included as a factor in the determination of a spectrum usage charge by administrations that utilize an Administrative Incentive Pricing (AIP) approach to spectrum pricing
- 11.2.1.2 Frequency re-use will only apply to station licences in the Authority's Authorisation Framework, where a frequency is assigned.
- 11.2.1.3 Frequency re-use is currently practiced by station licensees of point-to-point, VSAT and STL radiocommunications systems.
- 11.2.1.4 In the case of point-to-point, VSAT and STL systems, frequencies can be re-used by the same station licensee in two or more links of its system or by another station licensee operating point-to-point links in a system, based on the geographical location of the two systems or other characteristics of the radiocommunications equipment.
- 11.2.1.5 The beneficiaries of reduced spectrum usage charges based on frequency re-use should only be afforded to a station licensee who practices frequency re-use of assigned frequencies, in the design and implementation of its radiocommunications system, and not in cases where the Authority practices frequency re-use in proposed frequency assignments to licence applicants. This would imply that a station licensee that is assigned a frequency or frequencies that are already in use by one or more other licensees would not be have any reduction in spectrum usage charge unless the station licensee re-uses an assigned frequency.
- 11.2.1.6 The frequency re-use methodology should create a rational and reasonable reduction in spectrum usage charges for the re-use of frequencies by a station licensee, in order to optimize the spectrum efficient use of the resource.
- 11.2.1.7 When a frequency is assigned to a station licensee for use at a particular location, it cannot be assigned to another licence applicant for use at that same location. Therefore, the station licensee should remit a spectrum usage charge to the Authority for the right it enjoys, even though it may be re-using a frequency.

11.2.2 Descriptions

The frequency re-use methodology is described as follows:

11.2.2.1 The annual spectrum usage charge (100%) to be applied to the first assignment of a specified simplex frequency or frequency pair to a station licensee.

11.2.2.2 75% of the annual spectrum usage charge to be applied to the second assignment of the same specified simplex frequency or frequency pair to the same station licensee (i.e. the *first* re-use of the specified simplex frequency or frequency pair by the same station licensee).

11.2.2.3 50% of the annual spectrum usage charge to be applied to the third and subsequent assignments of the same specified simplex frequency or frequency pair to the same station licensee (i.e. the *second and subsequent* re-uses of the specified simplex frequency or frequency pair by the same station licensee).

This methodology is illustrated as follows:

Total annual spectrum usage charge for a frequency pair re-used n times (S_n) = $L_f (1.75 + 0.5(n-1))$: $n \geq 1$

Where L_f = annual spectrum usage charge for use of frequency pair
 n = number of frequency pair re-uses

11.3 Calculation Example

11.3.1 Point-to-Point Station Licence

Company X has applied for frequency pairs in the 4400 – 5000 MHz band for a microwave backhaul network comprising four (4) microwave links. The channel bandwidth of each frequency pair is 40 MHz. The frequency channel assignment is as follows, based on the capacity requirements of the four (4) links:

Link Name	Frequency Pairs No.
A	1, 2, 3
B	4
C	1, 2, 3
D	1, 2

Calculation Using Frequency Re-Use Discounting Method:

From the information above, the frequency pairs are assigned as follows:

- Frequency Pair No. 1 (F_1) = 3 times (i.e. $n_1 = 2$);
- Frequency Pair No. 2 (F_2) = 3 times (i.e. $n_2 = 2$);
- Frequency Pair No. 3 (F_3) = 2 times (i.e. $n_3 = 1$); and
- Frequency Pair No. 4 (F_4) = 1 time (i.e. no frequency re-use, thus re-use method would not apply).

The Annual spectrum usage charge for a Frequency Pair (L_f) = Spectrum Usage charge per MHz pair x 40 MHz

$$= \text{TT\$ } 4,000.00 \times 40$$

$$= \text{TT\$ } \mathbf{160,000.00}$$

Total Annual Spectrum Usage Charge (L_t) for Point-to-Point radiocommunications system (i.e. microwave backhaul network) will be:

$$\begin{aligned} L_t &= F_1 \text{ Annual Spectrum Usage Charge} + F_2 \text{ Annual Spectrum Usage Charge} + F_3 \text{ Annual} \\ &\quad \text{Spectrum Usage Charge} + F_4 \text{ Annual Spectrum Usage Charge} \\ &= L_f (1.75 + 0.5(n_1-1)) + L_f (1.75 + 0.5(n_2-1)) + L_f (1.75 + 0.5(n_3-1)) + L_f \\ &= \text{TT\$ } 360,000.00 + 360,000.00 + 280,000.00 + 160,000.00 \end{aligned}$$

$$\underline{L_t} = \text{TT\$ 1,160,000.00}$$

Note: The Total Annual Spectrum Usage Charge without the use of the re-use discounting method will be:

$$L_t = \sum (\text{Spectrum Usage Charge per MHz pair} \times \text{Total Bandwidth of Link}),$$

where \sum = sum of no. of links

$$\underline{L_t} = \text{TT\$ 1,440,000.00}$$

11.3.2 STL Station Licence

Company X has applied for three (3) Radio STLs for three (3) of its Free-to-Air Radio Broadcast station, two (2) located in Trinidad and one (1) located in Tobago. The channel bandwidth of each simplex frequency is 300 kHz. The frequency channel assignment is as follows, based on the capacity requirements of the three (2) STLs:

Link Name	Frequency Simplex No.
A	1
B	2
C	1

Calculation Using Frequency Re-Use Discounting Method:

From the information above, the frequency pairs are assigned as follows:

- Frequency Simplex No. 1 (F_1) = 2 times (i.e. $n_1 = 1$); and
- Frequency Simplex No. 2 (F_2) = 1 time (i.e. no frequency re-use, thus re-use method would not apply).

The Annual Spectrum Usage Charge for a Simplex Frequency (L_f) = Spectrum Usage Charge per MHz pair x 300 kHz

$$= \text{TT\$ 5.00} \times 300$$

$$= \underline{\text{TT\$ 1,500.00}}$$

Total Annual Spectrum Usage Charge (L_t) for Radio STL radiocommunications system will be:

$$L_t = F_1 \text{ Annual Spectrum Usage Charge} + F_2 \text{ Annual Spectrum Usage Charge}$$

$$= L_f (1.75 + 0.5(n_1 - 1)) + L_f$$

$$= \text{TT\$ 2,625.00} + 1,500.00$$

$$\underline{L_t} = \underline{\text{TT\$ 4,125.00}}$$

Note: The Total Annual Spectrum Usage Charge without the use of the re-use discounting method will be:

$$L_t = \sum (\text{Spectrum Usage Charge per MHz Pair} \times \text{Total Bandwidth of Link}),$$

where \sum = sum of no. of links

$$L_t = \text{TT\$ } 4,125.00$$

11.3.3 VSAT-Telecommunications Station Licence

Company X has applied for ten (10) VSAT stations for networking its branch offices throughout Trinidad and Tobago to its Head Office. The channel bandwidth of each frequency pair used by the VSAT network is 800 kHz. The frequency channel assignment is as follows, based on the capacity requirements of the ten (10) VSAT stations:

VSAT Link Name	Frequency Simplex No.
A	1
B	1
C	1
D	1
E	1
F	2
G	2
H	2

Calculation Using Frequency Re-Use Discounting Method:

From the information above, the frequency pairs are assigned as follows:

- Frequency Pair No. 1 (F_1) = 5 times (i.e. $n_1 = 4$); and
- Frequency Pair No. 2 (F_2) = 3 times (i.e. $n_2 = 2$);

The Annual Spectrum Usage Charge for a Simplex Frequency (L_f) = Spectrum Usage Charge per MHz pair x 800 kHz

$$= \text{TT\$ } 150.00 \times 800$$

$$= \text{TT\$ } \underline{\underline{120,000.00}}$$

Total Annual Spectrum Usage Charge (L_t) for VSAT radiocommunications system will be:

$$\begin{aligned} L_t &= F_1 \text{ Annual Spectrum Usage Charge} + F_2 \text{ Annual Spectrum Usage Charge} \\ &= L_f (1.75 + 0.5(n_1-1)) + L_f (1.75 + 0.5(n_2-1)) \end{aligned}$$

$$= \text{TT\$ } 390,000 + 270,000$$

$$\underline{L_t} = \underline{\text{TT\$ } 660,000.00}$$

Note: The Total Annual Spectrum Usage Charge without the use of the re-use discounting method will be:

$L_t = \sum (\text{Spectrum Usage Charge per MHz pair} \times \text{Total Bandwidth of Link}),$ where $\sum = \text{sum of no. of links}$

$$\underline{L_t = \text{TT\$ } 660,000.00}$$

Annex I: Decision on Recommendations

The following summarizes the comments and recommendations received from stakeholders on the first draft of this document (dated January 2012)

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
Section 1				
General	Digicel (Trinidad and Tobago)Limited	<p>Digicel wishes to express its profound disappointment with the quality of this document. The manner in which the document is written is consistent with the Authority's general practice of appearing to be avoiding transparency at all costs. It appears to be designed to draw attention away from the significant changes that are going to be brought about by the newly proposed fee structure.</p> <p>Every year concessionaires pay a substantial sum of money to the Authority in regulatory fees, indeed more so than our counterparts in the Caribbean. Given the gravity of the financial impact of the new fee structure, the level of detail and the lack of comparative analysis in this document are grossly unacceptable.</p> <p>It also appears as if there will only be one round of consultation on this very important issue, which then compounded with the obvious deficiencies in this document, will result in substantial prejudice accruing to operators in</p>	<p>Digicel hereby calls upon the Authority to re-issue an amended version of this consultation document for a two rounds of consultation.</p> <p>The re-issued document should set out the following:</p> <ol style="list-style-type: none"> 1.The current methodology used to calculate each type of fee; 2. The proposed methodology for calculating each type of fee; 3. A detailed explanation 	<p>The Authority will consider adding a further round of consultations.</p> <p>Notwithstanding further rounds of consultation, the Authority will take this opportunity to respond to Digicel's request for clarity:</p> <p>With respect to points 1,2 and 3 the Authority advises that the methodology has not changed. Indeed , the subject document has explained in greater detail the current methodology.</p>

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		Trinidad and Tobago.	<p>of each point of departure from the current methodology along with the justification for same;</p> <p>4. A full explanation of all coefficients and variables used in the calculations as well as any assumptions in how they are derived;</p> <p>5. Examples using hypothetical figures showing the different financial impact of each of the current and proposed methodology;</p> <p>6. A proper and comprehensive benchmark report setting out at a minimum the current date relative to each territory in the Caribbean region.</p>	<p>In Section 6.5, the Authority has provided the rationale for the various factors (scarcity and opportunity cost) in the derivation of the co-efficient.</p> <p>The Authority is of the view that the explanations provided in the document are sufficiently clear so as to provide guidance on how the values are derived.</p> <p>Digicel is reminded that benchmarks are used in lieu of an implemented methodology. Digicel is further reminded that this methodology is based on the economic value of a resource which would naturally vary between countries with differing economic circumstances.</p>
Introduction & General Comments	Columbus Communications Trinidad	CCTL welcomes the opportunity to contribute to the consultation on the fee structure.	CCTL recommends that the Authority should clearly identify the specific	The Authority has sought to clarify areas which may have been previously unclear in addition to making changes

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	Limited	TATT is proposing changes to the existing fee structure; however the consultation document does not clearly identify the proposed changes. This makes the document rather difficult to follow. In order to identify where changes are proposed you have to refer to the previous policy document in an effort to identify changes. CCTL recommends that in the interest of ensuring clarity and transparency, the Authority should clearly identify the specific changes (policies, calculation fee structure, charge level etc.) that are being proposed	changes (policies, calculation fee structure, charge level etc. that are being proposed.	which have arisen from the EPA 2013 which have been identified in the revised methodology.
General	CCN Television Limited	<p>1.TATT should advise on the likely impact to industry players. The Authority has the relevant historical information from the Broadcasters which can facilitate a comparison of the proposed replacement fees and the actual charges incurred by broadcasters. This will be useful in appreciating the impact of the change in methodology.</p> <p>2. What will be put in place to safeguard the industry from escalating operating costs of TATT. There must be a mechanism to ensure TATT operates efficiently and/or annual fee increases are restricted.</p> <p>3. We are unclear about the calculation of economic rent and its impact on on-going services.</p>		<p>The Authority will seek to provide comparative information on a case by case basis and to each provider upon request.</p> <p>The Authority agrees that operating costs should be controlled and is committed to ensuring that annual changes in costs as far as possible do not exceed inflation.</p>
1.2 The Consultation Process	Telecommunications Services	The Authority asserts that it “has updated the content (of the original document) to reflect the current charges in the	TSTT wishes to remind the Authority of the preamble	The Authority notes TSTT's concern however we do not agree with the

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	of Trinidad and Tobago Limited	telecommunications and broadcasting sectors”.	<p>to the Telecommunications Act, which state that,</p> <p>“.... It is appropriate that an Authority be established with transparent regulatory processes to guide the sector’ transformation....”</p> <p>TSTT respectfully reminds the Authority that the requirement for transparency is imposed by the Act, not only on telecommunications providers, but also on the Regulator.</p> <p>Throughout the document we see numerous references to the Authority’s costs, but these are not verifiable and given that it is the providers who carry the financial burden of funding the Authority, we believe that the lack of</p>	<p>sentiments. As TSTT is aware, the Authority publishes Annual Reports in accordance with Section 56(2) of the Telecommunications Act Chap. 47:31. These annual reports include the Authority’s Financial Statements. These are available on the Authority’s website.</p> <p>Also, the Authority’s Budget and past performance is s published annually in the “Estimates of Expenditure and Income” of the GORTT. This is in accordance with Section 55(2) of the Telecommunications Act Chap. 47:31.</p>

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			<p>transparency is unsatisfactory.</p> <p>We ask the Authority to consider the example of Jamaica's OUR in its interaction with providers on matters such as these. The link is as follows: http://our.org.jm/index.php?option=com_content&view=article&id=823:ours-corporate-plan-2010-2013-and-budget-2010-2011&catid=116:corporate-plan&Itemid=385</p>	
1.3 Fee Objective	Digicel (Trinidad and Tobago) Limited	<p>Digicel notes the stated objectives of the Authority in charging regulatory fees. However, Digicel feels compelled to voice its objections at this time to the level of telecommunication fees prevailing in Trinidad and Tobago.</p> <p>In order to attract investment and to create the most vibrant telecommunications market possible, operators should be treated no less favourably than other industry sectors. Operators contribute to the exchequer through payment of</p>	<p>The Authority needs to take a critical look at the total sum of money it has recovered in fees since its inception, versus its costs.</p> <p>The fact that it has accrued a significant surplus is testament to the fact that the fees levied on operators by the Authority is</p>	<p>The Authority produces annual reports which are laid in Parliament each year. These reports identify how the funds of the Authority have been used and the appropriation of any surpluses.</p> <p>Digicel is advised that all surpluses which have arisen have been derived from the economic value of spectrum which is distinct from cost recovery associated with Concession Fees.</p>

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		<p>corporation and value added taxes. But in spite of this operators are subjected to very large additional charges in the form of regulatory fees.</p> <p>These fees are not the only cost burdens borne by operators; there is also the matter of costs associated with the forcible implement of various forms of regulatory intervention which are neither necessary nor beneficial to the industry, as well as other imminent issues such as the universal service levy.</p> <p>We believe that the policy that should be adopted is to levy on operators only the reasonable costs of regulatory administration. The industry should not be seen as a cash cow from which the maximum possible monies should be extracted. A telecommunications regulator is not, and should not function like a profit making enterprise.</p> <p>The telecommunications industry is a major enabler of economic growth but in order to improve the technological literacy of the population of the country, operators must have sufficient funds to reinvest so as to be able to offer cutting edge products and services to consumers.</p> <p>If scarce funds are being diverted towards defraying voluminous costs, then it is unlikely that the telecommunications industry in Trinidad and Tobago will progress far beyond basic voice and text services.</p>	<p>unreasonable.</p> <p>In the interests of transparency, the Authority should share this information with operators, as well as disclose the manner in which the accumulated surplus of the Authority is going to be used.</p>	<p>Section 41(1) of the Act mandates that the Authority manages the spectrum resources and in so doing recover the economic value.</p> <p>The Authority publishes its Audited Financial Statements on its website. These statements provide details of any surpluses arising and how they have been utilized.</p>

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1.3 Fee Objectives	Columbus Communication s Trinidad Limited	<p>Section (41) and (52) of The Telecommunications Act 2001 establish the basis for the fees the Authority can levy on the industry. Section (41) addresses the recovery of costs related to the management of spectrum, and Section (52) establishes that fees for the administration of concessions and licences should be commensurate with the cost the Authority incurs in providing these services.</p> <p>CCTL understands that the spirit of the Act is that the “reasonable” cost for the Authority should be covered. This is an important point, because if the role of the Authority is to ensure the efficient and sustained development of the market, as guardians of the proper development of the market, the cost that the industry has to bear for the Authority to operate should be efficient. As such, the industry should be able to verify that the costs related to the running of the Authority are reasonable. The fees levied on the industry are a direct flow through of the Authority’s budgeted expenditure. To ensure market efficiency (that the market does not bear unreasonably high cost) and to ensure transparency, the Authority’s budgeted expenditure as well as information on financial performance should be readily available to the industry.</p> <p>In other Jurisdictions (notably Ofcom, (UK) Federal Communications Commission (FCC), USA, Canadian Radio – television and Telecommunications Commission (CRTC),</p>	<p>TATT should follow international best practice and make information about its financial performance readily</p>	<p>The Authority’s Annual Reports are published and are available for review by all providers.</p> <p>The Authority notes the recommendation and advises that its Audited Financial Statements are now published on the Authority’s website.</p> <p>The Authority agrees with this recommendation.</p>

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		<p>Office of Utilities Regulation (OUR) Jamaica, and National Telecommunications Regulatory Commission (NTRC) Grenada, the regulator publishes annual financial statements. One can simply go to the web sites of these regulators and access information on the financial performance of these entities. The attached link is an example of such reports –</p> <p>http:// www.crtc.gc.ca/publications/reports/fin11b.htm</p> <p>CCTL is not aware of any reasons why the situation should be different with TATT. In the interest of transparency, we would encourage TATT to follow international best practice and make information about its financial performance readily available to market participants and the public at large.</p> <p>One of the key objectives of economic regulation is to drive cost efficiency. While market participants have an incentive to drive efficiency, there is currently no way for the market to ascertain whether TATT is disciplined towards this same goal. We believe that one way of dealing with this is to peg TATT's budget to the level of activity in the industry. A factor representing the year on year change in the overall industry revenue could be used to adjust TATT's allowance budget for recovery from regulatory and licencing fees. Industry revenue is a good indicator of the activity in the industry. This would then be a proxy for the resource requirements of the Authority.</p>	<p>available to market participants and the public at large on the Authority's website.</p> <p>The Authority's annual budget should be pegged to the level of activity in the industry, based on a factor reflecting the year on year change in industry revenues.</p>	<p>The Authority has committed to manage changes to its annual budget as far as possible to the level of inflationary increases.</p>
1.3 Fee Objectives	Telecommunica	Providers are reminded that for both concessions and licences	In light of that declaration,	As TSTT is aware, the Authority is

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	tions Services of Trinidad and Tobago Limited	are guided by a cost recovery principle (p.6)	TSTT is seeking clarification as to the purpose of the spectrum charge previously imposed; and the purpose of the regulatory charge and spectrum charge going forward. In particular, how do these charges when combined with spectrum auction fees, remain true to the guiding principles of cost recovery.	permitted to recover the market value of Spectrum. Such market value has been set in the past by providers during Spectrum Auctions. The Regulatory charge related to concessions and service authorisations seeks to recover the cost of administering concessions and service authorisations. Each year, the portion of the budget related to concessions is published on the Authority's website in accordance with the Telecommunications fee Regulations 2006.
1.4 Concession Fee	Telecommunications Services of Trinidad and Tobago Limited	<p>We note that in the 2006 version of this document, the burden of operating and administrative expenses of the Authority were borne by Concession holders at the rate of 50.81% of total expenses. These expenses were shared between concession holders on the basis of the following formula:</p> $CF_1 = [(TR_{jt-1} / TR_{t-1}) * TC_t],$ <p>where the revenue of a concession holder, total sector revenues and total allocation of costs of the Authority in administering concessions were the elements of the formula.</p> <p>In proposing this new formula, we note that the Authority has</p>	<p>Given that the Authority has indicated that the document was being updated "to reflect current charges in the telecommunications and broadcasting sectors" (p.4), TSTT asks that the Authority share with the sector, what those changes are, particularly when the change in formula will see</p>	<p>The Authority notes TSTT's concerns. However, notwithstanding the changes made pursuant to EPA compliance, the expected fee burden of the conjoined service authorisation and concession fees will not exceed the prevailing concession fee.</p> <p>Otherwise, the only increase in fees relates to the increase in market value for particular types of spectrum. This increase arose from Spectrum</p>

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		failed to share its reasons therefor.	an increase in the level of fees being charged.	Auctions held and winning bids placed by providers. In some instances, spectrum fees will decrease again based also upon past spectrum auctions.
1.5 Licence Fees	Telecommunications Services of Trinidad and Tobago Limited	<p>To date, fees payable under the spectrum licensing regime have been referred to as a spectrum usage charge which was circumscribed by the purpose and the manner in which the spectrum was to be utilized. The charge was therefore based upon the classification of the frequency band. Such charge was also imposed in addition to any spectrum auction fee, in the instance of auction.</p> <p>In the current document the Authority proposes to add a Regulatory Charge, which is described as the proportion of the Authority's total administrative and operating costs allocated to a provider.</p> <p>While it is understandable that the Authority would want to ensure cost recovery of its administrative and operating expenses, TSTT must now ask the Authority to explain the exact purpose of the Spectrum usage charge if cost recovery was not a factor.</p>	<p>TSTT submits that cost recovery should be the basis of charging for spectrum and where auctions are used to allocate spectrum that the charges for spectrum over the period of the assignment be taken from the action fees collected.</p> <p>Indeed the Authority should also clarify the purpose of the fees paid by way of auction given the other charges that are imposed on providers with respect to spectrum.</p>	<p>The Authority is given the right to recover the economic value of spectrum and will continue to do so. The approach has been and will continue to be such that the cost recovery component is recovered from the economic value of the spectrum. Table 3 provides details on when spectrum usage charges will be applied and when not.</p> <p>In most instances, the Auction winning bid price is the first years' licence fee.</p>
1.5 Licence Fees	Trinidad and Tobago Publishers &	<p>The questions and concerns are as follows: Who defines "economic value of the spectrum? How is it defined? Is there a formula?</p>		The Economic value of the Spectrum is the Auction price paid by the provider in the most recent auction for

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	Broadcasters Association	Does the last sentence imply that the Authority has the ability to increase charges' at a moment's notice and licensees will have no recourse		similar or related spectrum. The determination of the coefficient outlined in section 6.2 refers.
1.6 Regulatory Charge	Digicel (Trinidad and Tobago) Limited	<p>The recovery of administrative costs is proposed on a fully allocated cost basis. It is submitted that this would result in licence (and corresponding concession) charges that are too high where spectrum is not scarce. Contributions towards the recovery of administrative cost should, in the first instance, be determined on the basis of incremental cost, as these represent the true opportunity cost of issuing a licence (or concession).</p> <p>.</p> <p>Although operators are made to bear the burden of the Authority's concession and licence related costs, it is alarming that there is no proper transparency as to the actual costs incurred, and the justification for same. Quite unlike operators all over the world, the Authority does not publish an annual report setting out the activities it has undertaken, not does it</p>	<p>Digicel submits that contributions towards the recovery of administrative cost should be determined on the basis of incremental cost as opposed to fully allocated costs.</p> <p>The Authority must commence on an annual basis the publication of a report setting out the following:</p> <ol style="list-style-type: none"> 1. A detailed statement of all concession and licence related administrative and operating charges 2. A detailed justification for any uplift in expenditure 3. A listing of all concession and licence 	<p>Digicel is asked to refer to Table 3 which outlines the principles behind spectrum fees when spectrum is scarce and not scarce.</p> <p>Digicel's reference to recovery of incremental costs is misapplied to this discussion on Regulatory fee determination.</p> <p>The Authority does not agree with Digicel. The Authority is required by law and publishes an Annual Report which is laid in Parliament each year. Annual Reports for all years from 2004/5 to 2012/13 have been laid in Parliament. The Annual Report provides details of the Authority's activities over the relevant year and its detailed Financial Statements including staffing complement etc.. The Authority also publishes its organisation structure on its website. As Digicel has noted, there has been</p>

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		<p>publish on its website or elsewhere details about administrative and operating expenses apart from the bare figures in its statutory accounts, which are not readily available. In countries such as the United Kingdom¹ and even closer by in Jamaica², regulators publish details about their expenditure which are made available for comment by operators, and even embark on stated cost saving initiatives.</p> <p>In stark contrast, the Authority's costs have either risen or fallen negligibly. In fact, a simple comparison exercise reveals that the Authority's costs per capita are astronomically high³ when compared to the regulators of countries similar to Trinidad and Tobago such as Guyana and Jamaica (note that the regulators in Guyana and Jamaica also have jurisdiction over utilities in addition to telecommunications).</p> <p>In the absence of such information, operators are doing the equivalent of writing a blank cheque to the Authority.</p> <p>As a public body, the Authority has a duty under law to act reasonably, and it is submitted that by failing to disclose such material information to operators, it is in breach of that duty.</p>	<p>related activities undertaken during the past year</p> <p>4. A listing of all proposed concession and licence related activities to be undertaken in the next year.</p>	<p>little or no increase in Concession fees over the past few years. This is particularly because the Authority is concerned about fee escalation and keeping its costs at reasonable levels.</p> <p>Identified below are the Concession Fees actually levied on telecommunications Service Providers:</p> <p>2008/09 - \$25,283,849 2009/10 - \$26,393,052 2010/11 - \$25,955,335 2011/12 - \$23,826,906 2012/13 - \$23,808,260</p> <p>The Authority has not been provided with any figures by Digicel to justify its statement comparing our fees with that of the OUR in Jamaica. It may well be that the cross sectorial nature of the OUR may give rise to economies of scale.</p> <p>Further, for clarity, the OUR does not manage the national spectrum</p>

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				<p>resource, as the Authority. As such, this additional cost or other charging mechanisms would not be reflected in the OUR's fees.</p> <p>The Authority continues to provide information through its annual report as required by the Telecommunications Act Chap. 47:31.</p>
1.6 Regulatory Charge	Columbus Communication s Trinidad Limited	<p>Section (41) of the Act addresses spectrum related costs and Section (52) concession and licencing related costs. Both sections allow the Authority to levy fees on the industry that is commensurate with its costs. TATT speaks of a comprehensive cost assessment exercise as the basis for the classification of its annual expenses into administrative and operating expenses. However TATT has provided no further information on this assessment exercise. There is a reference made to Table 2, which is purported to contain information on the allocation of regulatory expenses between concessions and licences, but Table 2 in the document does not relate to allocation of expenses.</p> <p>Since no further information is provided CCTL is not in a position to assess the reasonableness of this exercise and whether appropriate allocations have been made with respect to administrative versus operating related costs.</p>		<p>The details of costs related to Concession Fees are provided in the Fee Structure document. An example of the cost separation can be seen in Table 2 of the document, the output of which forms the basis of the information published by the Authority by March 1st each year, in accordance with the Fees Regulations.</p>

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		In the interest of transparency we recommend that TATT provides the industry with adequate information on its cost assessment and expense allocation exercise.		
1.6 Regulatory Charge	Telecommunications Services of Trinidad and Tobago Limited	<p>The Authority is treating the issue of regulatory charges for concessions and licences in the same way, quoting section 41 of the Act as authority for the application of regulatory charges in respect of both concessions and licences. We submit that this is an inaccurate interpretation of the legislation.</p> <p>Where Concessions are concerned, the empowering provision is section 52, which states:</p> <p>52(1) The Authority shall, in accordance with the policy framework established by the Minister – charge fees for any concession or licence; and</p>	<p>There needs to be greater accountability to the concessionaires and licence holders of actual expenses incurred by the Authority. We recommend further that it is not enough to submit those expenses, but further that there needs to be a cap placed upon the amount that can be imposed upon providers individually or upon the sector as a whole. Expenses should not just be passed on.</p> <p>If as the Authority has stated, the changes in the telecommunications and broadcasting sectors account for the changes to</p>	<p>The Authority notes your concerns and continues to manage its expenditure in such a way as to ensure that fluctuations do not occur and annual increases do not as far as possible exceed inflation.</p> <p>Identified below are the Concession Fees actually levied on telecommunications Service Providers:</p> <p>2008/09 - \$25,283,849 2009/10 - \$26,393,052 2010/11 - \$25,955,335 2011/12 - \$23,826,906 2012/13 - \$23,808,260</p> <p>The Administrative costs relate to the amount of time spent by the Authority's employees and other related costs of administering Licensees, Concessionaire and</p>

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		<p>charge fees for any service that it provides.</p> <p>(2) Except as provided under section 41, fees charged by the Authority under subsection (1) shall be commensurate with the cost of –</p> <p>(a) providing a service under subsection (1)(b);</p> <p>(b) operating the Authority;</p> <p>(c) administering concessions or licences, and shall be charged to concessionaires, licensee or other persons where applicable, on a just and reasonable basis.</p> <p>Pursuant to section 52, therefore, the charging principle for regulatory charges with respect to Concessions requires that charges be commensurate with both administrative and operational costs.</p> <p>In furtherance of those principles, the Authority claims that it has conducted a comprehensive cost assessment and classified its annual administrative expenses accordingly. The Authority has failed to provide any information with regard to the allocation of administrative costs per provider.</p> <p>With respect operating costs, there is also a failure to demonstrate how allocations will be charged to concessionaires. Descriptions of how things are done in countries as diverse as New Zealand and the Kyrgyz Republic are not helpful, particularly as the Authority fails to indicate how it intends to allocate charges to providers.</p>	<p>the document, the Authority must explain the connection between the changes in the sector and its operational and administrative expenses.</p> <p>The Authority must also explain the purpose of the spectrum auction fee where charged and how, if at all, it impacts upon the Spectrum, Regulatory, Administrative and Operating Charges</p>	<p>Authorised Service Providers.</p> <p>The Spectrum Auction fee is used as the basis for determining the annual fee to be charged for Licences for that or related spectrum.</p> <p>The details of costs related to Concession Fees are provided in the Fee Structure document. An example of the cost separation can be seen in Table 2 of the document, the output of which forms the basis of the</p>

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		<p>TSTT therefore remains clueless as to the principles to be applied in the allocation of Regulatory Charges to Concessionaires.</p> <p>With regards to the application of Regulatory Charges in spectrum pricing, the law provides an exception in section 41 whereby the economic value of the spectrum may also be considered in arriving at spectrum fees.</p> <p>“41(1) The Authority shall regulate the use of the spectrum in order to promote the economic and orderly utilization of frequencies for the operation of all means of telecommunications and to recover the cost incurred in the management of the spectrum.”</p>		information published by the Authority by March 1 st each year, in accordance with the Fees Regulations.
1.6.1 Administrative Charges	Telecommunications Services of Trinidad and Tobago Limited	The document indicates that administrative costs will be a percentage of total administrative costs, however, what that percentage will be and the mechanism for determining that percentage is not revealed. Furthermore the list of administrative expenses is non-exhaustive and there are no safeguards against excessive expenditure, particularly under capital projects.	The Authority should place a cap upon administrative charges that can be imposed upon providers in any given year.	The Authority, as indicated in the document, commits to limiting the annual increase in administrative charges, where applicable, to no greater than the inflation rate.
1.6.2 Operating Charges	Telecommunications Services of Trinidad and	The list of expenses is non-exhaustive therefore, there is potentially no limit to what may go on that list as a legitimate operating expense. Within the list as provided, there are	Clarify operating expenses	An example of “staff emoluments not apportioned to licences of concessions” would be the cost of the

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	Tobago Limited	<p>questions, namely: what does “a portion of staff emoluments not apportioned to licences and concessions” mean and how does such an expense get on this list? What are “other legal expenses”. There are no legal expenses at all, on the list, so this item is being compared to what? What are “other human resource and finance costs”? Any costs must be directly linked to the administering of concessions and licenses – so what are these “other” costs with reference to? What are “other goods and services”?</p>		<p>equipment certification service, for which currently there is no charge.</p> <p>With regard to the operating expenses not identified, this general term refers to several items. These items are classified in accordance with established accounting practice.</p> <p>Further details can be found in our Audited Financial Statements on our website.</p>
1.7 Spectrum Usage Charge	Columbus Communications Trinidad Limited	We agree with TATT that “in a competitive environment, the market is the mechanism through which a fair price (market price) of a resource is established.” We would make the point however that TATT should use this principle consistently, such as in addressing retail prices and not only when dealing with the pricing of spectrum.		Noted. However, Authority is uncertain of the relevance of this comment for the document under consultation.
Section 2				
Section 2: Structure and Overview of the Telecommunications and Broadcasting Sectors in Trinidad and Tobago	Telecommunications Services of Trinidad and Tobago Limited	With a total of 76 Authorised and 76 Operational Concessions for telecommunications services, this sector is responsible for 3.5% of Gross Domestic Product, five years post liberalization. Whether or not this is a success or failure is a discussion for another forum.	In a largely stagnating sector with minimal real growth in all subsectors, the imposition of fee increases across the board, seems to lack wisdom, if	The Authority notes TSTT's comments but would like to advise that fee increases relate to spectrum fees and have not been effected “across the board”. The increases have arisen from the Spectrum Auctions

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		<p>Given that the Authority has updated its original document purportedly as a result of changes in the Telecommunications and Broadcasting Sectors (p.4), and given that the changes are ultimately punitive, as we will demonstrate further on in the document, it is necessary to examine the viewpoints expressed by the Authority in this Part.</p> <p>At page 13 of the document, the Authority claims that mobile domestic voice services achieved the highest revenues with approximately 46% of the earnings for the year, followed by the Fixed Market, which accounted for 17% . The other services are also broken down by revenues and percentages of total revenues earned by this sector. What seems clear is that in the mobile and fixed telephone sectors, while accounting for the largest portion of revenues, there has been a decline in revenues over the last three years (to 2010). This is also true of the International market. The services that are contributing least in terms of overall revenues are the areas showing growth, and clearly there is room for further expansion. In that regard, if one is looking to development within an economy, the need for growth of Internet services is the most critical. Over the period of review by the Authority, it would not be unfair to state that all services demonstrate alarming levels of stagnation. This appears all the more alarming when one considers that, according to the Authority, during 2010 subscribership increased across all services by a total of 154,000 such that the total number of subscribers for a</p>	<p>the desired result is growth in all subsets of the sector. The Authority should re-examine the economic realities of the telecommunications sector before imposing further punitive measures.</p>	<p>held for which operators have bid and set the price.</p>

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		<p>population of 1.3 million is 2.8 million.</p> <p>While mobile penetration is at 144%, it is noted that ARPU for mobile has declined by 3.4%. In Internet services ARPU has increased by 34.7% although the market remains small with only 24 subscribers per 100 inhabitants.</p> <p>What is demonstrated here is a stagnating market that appears unable to encourage significant consumer investment. Even mobile services have flat-lined as penetration levels appear to have reached maximum capacity</p>		
Section 3				
3.0 General Formula: Regulatory Charge for Concessions	Digicel (Trinidad and Tobago) Limited	<p>As stated previously it is economically inefficient and sends out the wrong signals if a licence has been purchased through an auction at above administrative cost and the licensee is then charged more than the additional incremental administrative cost of managing the associated concession.</p> <p>Generally, concession fees should only cover incremental administrative costs as otherwise this discourages operators of all sorts from providing services to the public even if it would have been in the public interest for them to do so.</p> <p>Once again we also note that the Authority is basing the Regulatory Charge on budget estimates as opposed to costs actually incurred.</p>	<p>Digicel calls upon the Authority to provide the following before any meaningful analysis of the proposed formula can be undertaken:</p> <ul style="list-style-type: none"> □ A full explanation of all coefficients and variables used in the calculations as well as any assumptions in how they are derived; □ A detailed comparison between the current and proposed methodologies 	<p>Noted.</p> <p>In Section 6.5, the Authority has provided the rationale for the various factors (scarcity and opportunity cost) in the derivation of the co-efficient.</p> <p>The Authority is of the view that the explanations provided in the document are sufficiently clear so as to provide guidance on how the values are derived.</p>

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		<p>In terms of the actual formula set out, we once again note that the manner in which it has been presented leaves much to be desired. However, despite the attempt to draw attention away from the implications of the new formula, it is quite clear that it represents a significant increase in concession fees.</p> <p>One is led to question why costs associated with managing concessions are in fact rising and not falling. The Authority has a duty in law to account for this.</p>	<p>along with the justification for the changes being proposed to the current methodology;</p> <p>□ Examples using hypothetical figures showing the different financial impact of each of the current and proposed methodology.</p>	
3.0 General Formula: Regulatory Charge for Concessions	Columbus Communications Trinidad Limited	CCTL notes that the Authority has amended the general formula to calculate concession fees. Instead of a single calculation the formula now has two components, an administrative charge and an operating charge	The relevant budget period used as the basis to calculate concession and licencing fees should not be changed to the budget of a future period.	<p>The budget period is set in the Telecommunications Fee Regulations 2006.</p> <p>The Authority agrees and has amended the document so that the relevant period remains the current period (t), as outlined in the Fee Regulations.</p>
3.0 General Formula: Regulatory Charge for Concessions	Telecommunications Services of Trinidad and Tobago Limited	TSTT takes note of the suggested formula for the determination of the concession fee which now comprises an administrative and an operating charge which is computed by reference to the concessionaire's share of industry revenue in the prior year and the budgeted or prospective costs of the	TSTT recommends that the proposed formula for the determination of the concession fee applicable to a given period should	The Authority agrees and has amended the document so that the relevant period remains the current period (t), as outlined in the Fee Regulations.

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		<p>regulator.</p> <p>Between the March 3, 2006 consultative document, and the present fee structure consultation document as at January 4, 2012 significant changes were made to the general formula. Each will be discussed in turn.</p> <p><u>Change made to alpha calculation</u></p> <p>Initially total Concession Fees (CF) were calculated as $[(TRj_t / TR_{t-1}) * TC_t]$, which is shown in the current consultation as one portion of the entire concession fee – or, the calculation for alpha (α_j) alone. Moreover, the formula shows a minor yet significant change in its representation of the Authority's Administrative Charge (TAC).</p> <p>Previously, the Authority's administrative charge was based on the current year (t) as evidence in the formula above. Now, the current consultation document proposes $\alpha_j = [(TRj_{t-1} / TR_{t-1}) * TAC_{t+1}]$. Where administrative charges (TAC t+1) is anticipated to be budgeted rather than current charges without any rationale why this change is proposed. TSTT notes an inherent issue in moving from current charges to one of a budgeted nature. Or, diverge away from an actual to an estimated nature. In year (t) administrative charges would have been realized and actual values could be identified and</p>	<p>match the actual regulatory costs incurred (administrative and/or operating) to the period in which the benefit was earned through grant of concession.</p> <p>At minimum, the formula for the Administrative and Operating Charge should be constructed as follows:</p> $\alpha_j = [TRj_{t-1} / TR_{t-1}] * TAC_t$ $\beta_j = [TRj_{t-1} / TR_{t-1}] * TOC_t$ <p>Further in the implementation of the concession fee computation, the recovery of the cost of regulation by the Authority must take place on an ex-post basis rather than an ex-ante basis as the currently proposed. Concession fee calculation must therefore be based on</p>	<p>As you are aware, it is important that providers know in advance what their charge for the year is likely to be. This proposal of actual expenditure vs. budgeted expenditure could lead to fluctuations in invoicing to concessionaires.</p>

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		<p>assigned. However, when charges are budgeted, in most cases the derived estimate is overstated, and difficulty will result for concessionaires in tracing the items and associated charges. Given the multiplicative nature in the formula alpha is going to be potentially greater for each consecutive period concession fees are due. Moreover, a beta (β_i) variable is added to the formula which threatens further increases in concession fees in exponential proportions.</p> <p><u>Addition of a beta (β_i) variable</u></p> <p>Under the new changes to the general formula for regulatory charge and concessions, TSTT notes a beta variable (β_i) is added to the formula. The Authority only indicated that (β_i) represents an operating charge (pg 19) and attempted to illustrate how (β_j) for concessionaire j is derived (pg 20). We note, in the first instance, there is a noticeable lack of justification for the inclusion of the beta variable. In the amended general formula concessionaires could potentially be confronted with an increase for concession fees due to the additive relationship of alpha and beta. Without much needed details accepting the inclusion of beta poses a significant challenge as further questions arise, as follows:</p> <p>What items will qualify as the Authority's operating expenses specific to calculation of concession fees?</p>	the Authority's actual rather than budgeted expenditure	The Authority notes these comments and has amended the relevant period in the formula accordingly.

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		<p>Will any document be made available to concessionaires to trace the budgeted operating charges?</p> <p>In the instance the Authority over budgeted will concessionaires be refunded in a subsequent period?</p> <p>TSTT is dismayed at the lack of information/reasoning for the change in formula which moves from a current to an estimated nature?</p> <p>Discussion for the inclusion of beta is also lacking.</p> <p>Further to the above, the proposed formula is subject to the same deficiencies of its predecessor in that:</p> <p>The concession fee charged in a particular year is not a reflection of the actual regulatory costs incurred in that year since the basis for the payment is the budgeted or prospective expenditure of the authority. The formula is better geared towards financing the Authority's prospective budget than recovery of actual cost of regulation.</p> <p>Variances between budgeted expenditure and actual expenditure occur and may be significant but the consultative document is silent as to how these will be dealt with and which party (Concessionaire or the Consolidated Fund) is to benefit from a surplus or make good a shortfall.</p>		

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		<p>Practical application of the formula to the calculation of concession fees involves the use of unaudited figures for concessionaire revenue estimates when concession fees are due. There is therefore a requirement for subsequent review of concession fees as audited information from concessionaires becomes available. The timely performance of these reviews by the Authority is an issue at implementation.</p> <p>Where concession fees are rebated due to variances between audited and unaudited revenue figures, a concessionaire is deprived of the use of its capital and the profit derived from employing it in its operations over the period to receipt of rebate.</p> <p>Where there is a requirement to adjust concession fees due by charging an additional amount in a subsequent period due to variances in audited and unaudited revenue figures, significant uncertainty is introduced as to the amount and timing of the obligation to the Authority, and this hinders planning and scheduling of payment by the concessionaire.</p> <p>In TSTT's experience, the quantum of the aforementioned rebates and additional charges have been to the order of several millions of Trinidad and Tobago dollars annually. This capital could have been invested in the operations of the concessionaire and earned significant returns. TSTT regards</p>		<p>The Authority has considered whether it can remove the recalculation of concession fees from its process but would be unable to do so unless concessionaires commit to:</p> <ul style="list-style-type: none"> - Submission of audited statements by no later than

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		the continued use of this formula as contributing to the levy of unfair and uncertain charges on concessionaires' capital by the Authority.		June 30 th annually; and - Remittance of such fees no later than the fee payment date..
3.0 General Formula: Regulatory Charge for Concessions	Trinidad & Tobago Publishers & Broadcasters Association	<p>Generally the issue of how TATT structures its expenses is of concern only because if TATT's expenses go up then, based on the current draft of concession fees, broadcasters end up fitting the bill so to speak.</p> <p>Can a ceiling be placed on the Total Cost of the Authority so that broadcasters know what needs to be provided, ahead of time, and can budget accordingly?</p> <p>How do we know reasonableness will be maintained in the operational projections for TATT? There is the chance that TATT's Cost can see as much as a hundred percent (100) increase year to year since there is no rate of increase specified.</p> <p>With decreased advertising and a slow economy, broadcasters</p>		<p>The Authority notes your comments, however over the past five years, Broadcasters contributions have remained the same or similar. The total fees actually levied on Broadcasters are identified below:</p> <p>2008/09 - \$2,217,733 2009/10 - \$1,988,875 2010/11 - \$2,174,528 2011/12 - \$1,933,094 2012/13 - \$1,951,740</p>

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		face economic challenges and this has the potential of becoming a financial burden if careful consideration is not given to our positions. What assurances or structure can be implemented to ensure a drastic escalation is not introduced?		
3.1 Administrative Charge	Columbus Communications Trinidad Limited	<p>The new administrative charge element is given as $\alpha_j = [(TR_{jt-1}/TR_{t-1}) * TAC_{t+1}]$. Of significance is the fact that the variable TAC_{t+1}, which represents the total administrative cost of the Authority's budgeted year, is now given as year $t+1$, as compared to year "t" in the existing computation. This essentially bases the administrative charge on the authority's budget for a future year, as opposed to the current year, as is the case now.</p> <p>This change means there is a two year lag between the industry revenue base for determining the fees and the budget period to which the fees relate. Given the trend for costs to increase over time, (e.g. TATT's budget for 2010 to 11, was 9% above the 2009/10 budget) this has the effect of increasing industry fees. TATT should explain the reason for this change.</p> <p>CCTL questions the rationale for this change for a number of reasons but particularly because tying fees to a budget for a future year means that the fee basis is more speculative. This can only be seen as a way for TATT to extract further revenue</p>		<p>The Authority agrees and has amended the document so that the relevant period remains the current period (t), as outlined in the Fee Regulations.</p> <p>The Authority attempts as far as possible to reflect only inflation changes to its budget.</p> <p>In 2010, the Authority gained approval for a larger and more efficient structure. The Authority's total staff complement increased to a maximum of 85 employees. This increase in budget reflects the increased organisation structure.</p>

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		<p>from the market. In our view this is contrary to the notion of ensuring market efficiency. TATT should be held to the same standard as the industry it seeks to regulate.</p> <p>The formula for the operating charge $\beta_j = [(TR_{jt-1}/TR_{t-1}) * TOC_{t+1}]$ is similarly changed to move the relevant budget year for TATT's operating expenses one year forward. CCTL does not support this change for the reasons expressed above. In fact, as the market becomes more competitive, there should be fewer reasons for regulatory interventions, as such fees should decline rather than increase.</p>		
3.2 Operating Charge	Columbus Communication s Trinidad Limited	In the example of the computation provided, CCTL is not clear how the total of \$2,096,000 is derived. Something seems to be missing, so we are requesting that the Authority clarifies this computation.		The Authority notes this comment and has removed this example for the avoidance of doubt..
Table 3 Primary Allocation of TATT's Regulatory Expenses	Columbus Communication s Trinidad Limited	<p>CCTL questions the basis and mechanism used for allocating costs to concessions vs. licences plus separating administrative and operating expenses. The entire process lacks transparency. We believe that TATT should provide the industry with information on allocation principles and rules to allow market participants to be more comfortable with the process. The output of the process has financial implications for concessionaires so transparency and the ability to verify the numbers are important.</p> <p>For instance CCTL is not sure whether the cost separation</p>	TATT should provide the industry with adequate information on its cost separation exercise, including confirmation as to whether the percentages attributable to concession and licencing fees are derived annually.	<p>The Authority provides the summary of its concession costs on its website annually in accordance with the Telecommunications Fee Regulations 2006.</p> <p>An example of this has been provided in Table 2 of this document.</p>

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		percentages are derived annually or whether they are set based on the percentages derived during the consultation process. For example, information on TATT's website gives the concession percentage for the 2010/11 budget as 47.6%. However based on this document, the percentage attributable to concession is 52.55%. CCTL is asking that TATT clarifies this seeming inconsistency, and also confirm whether the percentages are derived annually		
3.3 Secondary Allocation of Regulatory Expenses for Concession	Digicel (Trinidad and Tobago) Limited		<p>The Authority should provide to operators the details about the "thorough activity-based cost allocation exercise" it has supposedly conducted in order to arrive at the information set out in Table 3.</p> <p>The Authority should provide to operators the details about how the allocations set out in Table 4 were arrived at.</p>	The details of costs related to Concession Fees are provided in the Fee Structure document. An example of the cost separation can be seen in Table 2 of the document, the output of which forms the basis of the information published by the Authority by March 1 st each year, in accordance with the Fees Regulations.
3.3 Secondary Allocation of	Columbus	TATT states that "Regulatory expenses have been attributed to		

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
Regulatory Expenses for Concession	Communications Trinidad Limited	<p>concessions and licences based on expected demands that each category will place on the resources of the Authority in a given year.”</p> <p>CCTL seeks clarification on TATT as to the basis on which it forecasts expected demands on its resources and whether there is any mechanism to revisit the actual and make adjustments where forecast varies from actual.</p>		
3.3 Secondary Allocation of Regulatory Expenses for Concession	Telecommunications Services of Trinidad and Tobago Limited	This section of the document is confusing and we ask that the Authority clarify the intention here. Is there going to be a second regulatory charge in addition to the one referred to above, and if so, on what basis?	Clarification is required here.	The Authority wishes to confirm that there is only one (1) Regulatory Charge.
Section 4				
4 General Formula: Regulatory Charge for Licences	Digicel (Trinidad and Tobago) Limited	Our comments above refer.	<p>Digicel calls upon the Authority to provide the following before any meaningful analysis of the proposed formula can be undertaken:</p> <p>A full explanation of all coefficients and variables used in the calculations as well as any assumptions in how they are derived; A detailed comparison between the current and</p>	<p>In Section 6.5, the Authority has provided the rationale for the various factors (scarcity and opportunity cost) in the derivation of the co-efficient.</p> <p>The Authority is of the view that the explanations provided in the document are sufficiently clear so as to provide guidance on how the values are derived.</p>

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
			proposed methodologies along with the justification for the changes being proposed to the current methodology; Examples using hypothetical figures showing the different financial impact of each of the current and proposed methodology.	
4 General Formula: Regulatory Charge for Licences	Columbus Communications Trinidad Limited	<p>These fees are also impacted by the cost allocation principles and methodologies discussed above. As such, the concerns expressed are applicable in this area as well. In general we find the revised formulation more complicated than what previously obtained. The more complicated it is, the greater the propensity for errors.</p> <p>The document states that <i>“In order to encourage investment and development of the sector, in the current period the Authority has not imposed an operating charge on those category of licences for which its operating expenses are fully recovered by the Spectrum Usage Charge (see Section 8) and in the Authority’s opinion the total fee would otherwise be a deterrent to investment</i></p> <p>CCTL is seeking clarification on the above statement. It is not</p>		The Authority wishes to clarify, in accordance with Table 6 of this document, that operating expenses are recovered fully from the spectrum usage charges for Grades 1 and 2 spectrum classifications.

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		clear as to which categories of licences operating expenses are fully recovered from spectrum usage charges. Reference is made to Section 8 of the document, but this section is an appendix giving information on licences fees methodology from a number of countries. TATT should clearly state the categories of licences for which operating expenses are fully recovered from spectrum fees. Our concerned is that this could imply that more costs would be shifted to other areas such as concession fees. As such clarity is required so we can assess whether this is justifiable.		
4 General Formula: Regulatory Charge for Licences	Telecommunications Services of Trinidad and Tobago Limited	<p>The Authority states, the Regulatory Charge, RCL applicable to any licence is:</p> $RCL = \epsilon l + \eta l$ <p>We note ηl Was included in the formula but was not discussed or shown how it will be calculated</p>	More detail is needed in the calculation of ηl . In addition all comments/concerns highlighted with reference to concessions are relevant to the issue of licences.	The Authority has revised the relevant section of the document to clearly identify the variable ηl . (operating charge) in Table ??
4.1 Formula Re: Administrative Charge Per Licence	Telecommunications Services of Trinidad and Tobago Limited	<p>The Authority states, the Administrative charge per licence ϵl is derived using the formula:</p> $\epsilon l = TAEli / N$ <p>Where: ϵl = the applicable Administrative Charge</p>		The Authority agrees with this recommendation and the document has been amended accordingly.

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		<p>in making TAE_{li} the subject of the formula we get:</p> <p>$TAE_{li} = \epsilon_l * N$, which represents the applicable Administrative charges multiplied by the Number of licences in the sub-category.</p> <p>The Authority on page 23 states however, $TAE_{li} = \pi_i(TAE_l)$</p> <p>We note, there is no basis how the Authority formula was derived and it is misrepresented. If TAE_{li} is the dependent variable then $\pi_i(TAE_l)$ will have to be the subvalues so when computed together would give TAE_{li}.</p> <p>For example $5 = 2 + 3$</p> <p>5 is the dependent variable. Note 2 and 3 are not total values rather subvalues so when computed together will give the value of 5. The same concept should exist in this instance.</p> <p>Therefore π_i is not the proportion of total administrative expenses of the Authority allocated to all licences within the category where licence i is classified. Likewise TAE_l is not</p>	<p>π_i = the proportion of applicable administrative expenses of the Authority allocated to all licences within the category where licence i is classified</p> <p>TAE_l = the proportion of applicable administrative expenses of the Authority allocated to all categories</p>	

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		the proportion of total administrative expenses of the Authority allocated to all categories of licences it should read as “the proportion of applicable administrative expenses...”	of licences	
		Section 5		
5 Methodology Licence Fees	Columbus Communication s Trinidad Limited	The spectrum usage charge principles seem consistent what currently obtains, with the possible exception of allowance for cost recovery charges to be levied on grades 3 and 4 spectrum. To increase clarity we suggest that the Authority clearly articulates any differences between the existing regime and what is being proposed.	To increase clarity we suggest that the Authority clearly articulates any differences between the existing regime and what is being proposed.	Noted. The Authority would like to confirm that there has been no change with regard to the application of fees for Grades 3 and 4 spectrum in the document.
5.4.2 Determination via Benchmarking	Columbus Communication s Trinidad Limited	Given the state of the development of the market, we do not see the need for using benchmarks. TATT should clarify why this is a consideration		This is an option that has to be stated for completeness of the methodology.
5.5 General Formula: Licence Fees for Grade 2 Spectrum	Digicel (Trinidad and Tobago) Limited	Digicel is unclear what the calculation for grade 2 spectrum would yield in terms of fees and seeks clarity from the Authority in order to provide full comments.	<p>Digicel calls upon the Authority to provide the following before any meaningful analysis of the proposed formula can be undertaken:</p> <p>A full explanation of all coefficients and variables used in the calculations as well as any assumptions in how they are derived;</p>	<p>In Section 6.5, the Authority has provided the rationale for the various factors (scarcity and opportunity cost) in the derivation of the co-efficient.</p> <p>The Authority is of the view that the explanations provided in the document are sufficiently clear so as to provide guidance on how the values are derived.</p>

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
			A detailed comparison between the current and proposed methodologies along with the justification for the changes being proposed to the current methodology; Examples using hypothetical figures showing the different financial impact of each of the current and proposed methodology.	
5.5 General Formula: Licence Fees for Grade 2 Spectrum	Columbus Communication s Trinidad Limited	<p>CCTL believes that it would have assisted the process if TATT had clearly spelt out the changes it is proposing to the existing calculation of the fee for Grade 2 Spectrum, instead of simply outlining a new approach. As presented it is quite difficult to follow the changes being proposed.</p> <p>One change noted is the application of the factor μ, which is given as “<i>a ratio that represents the difference in economic value between the radiocommunications service that applies to Ksmj to that of the radiocommunications service to be determine in band j</i>”. While the value of spectrum usage charge (<i>Ksmj</i>) is derived from the auction, it is not clear how the value the relevant service (j) is determined. We are requesting clarification on</p>	TATT should clearly identify the changes being made to the new fee structure, and give concrete examples of the impact of the new regime.	<p>The Authority wishes to confirm that, other than adjustments for EPA compliance, the methodology has remained unchanged.</p> <p>The Spectrum Usage Charges have changed due to on auctions that would have occurred after the approval of the last Telecommunications (Fee) Regulations, 2006.</p>

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		<p>this point.</p> <p>We believe that it would helpful is TATT gives examples of current fees and how they would change under the application of this new regime. The explanations given tend to be very abstract and it is difficult to assess or translate to actual fees.</p>		
5.6 Licence Fee for Grade 3 Spectrum	Digicel (Trinidad & Tobago) Limited	Digicel submits that it would be economically damaging to charge fees above the administrative cost for spectrum that his not scarce or where demand equals supply. Therefore, if grade 2 spectrum is not scarce and demand does not equal supply only <i>incremental administrative costs</i> should be recovered in respect of the use of that spectrum.	Digicel suggests that this methodology be revised.	The Authority is opined that this proposal misapplies the philosophy and application of marginal costing approaches.
Section 8				
8 Appendix: Licence Fee Methodology for a Sample of Countries	Digicel (Trinidad & Tobago) Limited	<p>Once more the Authority has seen fit to engage in selective benchmarking by citing only the countries with models that serve to advance the position of the Authority. That being said, however, it is unclear why the Authority has even included this section in the consultation document as no useful analysis or actual spectrum pricing information is presented on each of the countries strategically selected. In fact, for the most part, the Authority has merely reproduced information contained in the corresponding section in its 2005 document, without even updating same.</p> <p>It is axiomatic that international benchmarking can be a useful exercise, particularly for smaller countries. Even if</p>	The Authority needs to present more comprehensive benchmarking section with actual pricing information. The onus is on the Authority to show operators that the pricing under the proposed methodology is consistent with international best practice.	<p>Noted. However, the Authority does not agree with the recommendation, as local market and economic conditions would take precedence.</p> <p>This Appendix has been removed for the avoidance of further confusion</p>

Document Sub-Section	Submission Made By: Stakeholder Category	Comments Received	Recommendations Made	TATT's Decisions
		<p>benchmarking is not the primary means of setting spectrum prices, at the very least it can serve as a check and balance on the prices derived by other methods, so as to ensure that they are not out of step with international practice.</p> <p>It is well accepted practice that comparisons should be drawn with countries with similar characteristics. However, such comparisons may not always be available. In order to establish a representative sample, it is often necessary to take observations from very different countries. In this case, collated data will need to be weighted to take account of differences in factors which may impact on fee levels between countries (e.g. market size, population density, topography etc.)</p> <p>No such analysis has been undertaken by the Authority and the lack of Caribbean benchmarks is indeed telling.</p>		