Telecommunications Authority of Trinidad and Tobago

Consultative Document

PROPOSED CENTRAL OFFICE CODE EXHAUST ANALYSIS METHODOLOGY

February 2008 TATT 2/12/2

Maintenance History		
Date	**Change Details**	**Version**
1 November 2007	First Draft for Consultation.	0.1
13 February, 2008	Revised Draft for Second Consultation Round. Revisions made based on comments and recommendations received in the first consultation round.	0.2

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1 Introduction

The numbering resources are a vital part in the service provisioning of public telecommunications services to end users. There is a general format for numbers used in the provision of public telecommunications network services as prescribed by the ITU-T Recommendations E164. Further refinement to this general format occurs at the level of national number administration, which takes into consideration the capabilities of the public telecommunications networks. While numbers are also used by concessionaires for their internal network arrangements, the assignment of numbers for identifying users of a public telecommunications network far exceed the former usage. It is therefore necessary that the usage of numbers be monitored to ensure that there is an adequate supply of numbers for the provisioning of services to users.

Trinidad and Tobago is a participating country in the North American Numbering Plan (NANP), which includes other participating countries such as Canada and the English speaking Caribbean. As a NANP participating country, Trinidad & Tobago shares country code 1 with the other participating countries and its area code (868) is allocated by the NANP Administration (NANPA), in the USA. The assignment of numbers within the area code to public telecommunications network concessionaires is done locally by the Regulator. The guidelines developed by the NANPA to plan and administer these numbers are adhered to by Trinidad and Tobago, to the extent possible, as described in the National Numbering Plan for Central Office (CO) Codes and Home Network Identity (HNI) Administration.

Trinidad and Tobago has been assigned a Numbering Plan Area (NPA) code by NANPA, which follows to format 868 NXX XXXX (where N = 1 to 9 and X = 0 to 9). As identified in the National Numbering Plan, this NPA code is further divided and allocated to various service categories, such as fixed line services, mobile services, premium services, etc. Currently, the number allocation to the each service category is determined by the estimated demand for numbers by that category. Utilization thresholds must be established to alert number administrators that the allocations to these service categories are in jeopardy of being

exhausted and to deploy conservation methods which will delay the exhaust or to make further number allocations to the exhausted service category. There are 792 CO codes, with each CO code providing for 10,000 numbers, available in the 868 NPA and while this may seem to be a large quantity for a small island nation, there is a requirement for careful management of this resource. Therefore, a method needs to be employed to monitor the usage and potential exhaust of the number allocations to different service categories in the National Number Plan developed for Trinidad and Tobago.

The methodology used in this document is based on the NANPA practices as Trinidad & Tobago is a participating country of the NANP. While there are methodologies used by other nations to manage their numbering resources, it will be prudent to conform to the NANPA practices suitably modified, where necessary, to the Trinidad & Tobago environment.

1.1 Regulatory Framework

Sections 18(j) of The Telecommunications Act No 4 of 2001, gives the Telecommunications Authority of Trinidad & Tobago, hereafter called the 'Authority', the mandate to plan, administer, manage and assign telecommunications numbering for telecommunications services. Implicit therein is the duty of the Authority to effectively and efficiently manage telecommunications number resources and to thereby request the relevant information from concessionaires.

1.2 Purpose

Trinidad & Tobago, despite being a sovereign nation, has an obligation to report number utilization in the 868 NPA to the NANPA so that an accurate exhaust projection can be obtained for the entire NANP and if necessary, to prepare for NPA relief should the 868 NPA assignment be in jeopardy of exhaust.

This consultative document proposes guidelines and procedures to be adopted by the Authority for the determination of the utilization of numbering resources and, in particular, the exhaust projection for the number allocations to the service categories defined in the National Numbering Plan developed for Trinidad & Tobago.

1.3 Review cycle

As the telecommunications sector grows and develops into more efficient and competitive markets, the need may arise to revise and update the CO Code Exhaust Methodology that is adopted by the Authority. As such, the CO Code Exhaust Methodology will be modified accordingly in consultation with concessionaires, stakeholders, interested parties and the public, as the Authority deems appropriate. The maintenance history will be modified accordingly.

1.4 Consultation Process

The Authority, sought the views and opinions of the general public and other stakeholders regarding the proposals made in first draft of this document in accordance with the Authority's *Procedure for Consultation in the Telecommunications Sector of Trinidad and Tobago.* The Authority received a number of comments and recommendations in that consultation round and made appropriate revisions to the *Proposed CO Code Exhaust Methodology*. The Decisions on Recommendations (DOR) matrix at Annex 1 summarises the comments and recommendations received in the first consultation round and the decisions taken by the Authority.

The Authority is now seeking further comments and recommendations from interested parties on the revised version of the *Proposed CO Code Exhaust Methodology*. The Authority's consultation procedures and comment submission form are available on the Authority's website, http://www.tatt.org.tt. Comments should be submitted on or before 27th **February, 2008** to:

Executive Director

Telecommunications Authority of Trinidad and Tobago

BEN Court, 76 Boundary Road

San Juan

Or email to: technical@tatt.org.tt

2 Definitions

In order to determine the quantity of available numbers in a CO code, the various categories to which numbers can be designated must be defined. The following gives the definitions used by NANPA[1] for the various categories to which numbers can be designated. These definitions are the industry standard for the NANP.

Administrative Numbers	Administrative numbers are numbers used by telecommunications carriers to perform internal administrative or operational functions. Examples of administrative numbers are: Test numbers, employee/official numbers, Location Routing Numbers, Temporary Local Directory Numbers
Aging Numbers	Aging numbers are disconnected numbers[2] that are not available for assignment to another end user or customer for a specified period of time. Numbers previously assigned to residential customers[3] may be aged for no more than 90 calendar days. Numbers previously assigned to business customers[4] may be aged for no more than 365 calendar days.

[1] NANP Numbering Resource Utilization /Forecast (NRUF) reporting guidelines. ATIS -0300068.
[2] Disconnected numbers are numbers that are no longer used to route calls to equipment owned or leased by subscriber of record.
[3] Residential customers are customers who subscribe to the concessionaire's residential package
[4] Business customers are customers who subscribe to the concessionaire's business package

Assigned Numbers	Assigned numbers are working numbers used in providing services to customers for their use, or numbers not yet working but having a customer service order pending.
Reserved Numbers	Reserved numbers are numbers that are held by concessionaires at the request of specific end users or customers for their future use. Numbers held for more than 60 working days shall not be classified as reserved numbers.
Available Numbers	Available numbers are numbers that are available for assignment to subscribers to enable them to access telecommunications services. The quantity of Available numbers can be determined by the formula: Total quantity of numbers in the CO code or block inventory minus the sum of Assigned, Reserved, Aging and Administrative numbers.
Service Categories	The categories identify the various services which use Numbering resources e.g. Premium services, Operator and Plant test codes, short codes, subscriber codes fall into this category as defined in the National Numbering Plan.

The Concessionaires who utilize number resources are required to submit utilization and forecast data by CO code for the numbers assigned to them by the Authority. These definitions will guide them in reporting in what categories the numbers have been used.

3 Responsibilities of the Concessionaire

After *the CO Code Exhaust Methodology* is adopted by the Authority, concessionaires will be responsible for the following activities which support the Authority's mandate to efficiently manage the numbering resource as follows:

1. Concessionaires are required to provide number utilization and forecasting data on a semi-annual basis by the following due dates[5] for the purpose of performing the CO code exercise:

a) March 31st for the six month period commencing July and ending December 31st of the previous year; and
b) September 30th for the six month period commencing January and ending June 30 of the current year.

2. Concessionaires may also be required to submit the CO code issuance: Utilisation/Forecast form[6] when requesting additional CO codes for growth as required.

3. The number utilization and forecast data is to be presented on a per exchange (NXX) basis for fixed lines only where CO codes cannot be shared between switching entities.

4. Concessionaires are also required to provide validation data[7] to the Authority, as requested, for the processing of requests for additional (growth) codes and semi-annual *Number Utilization Reports*.

All data submitted must be accurate as it will guide the Authority in determining the exhaust date of the quantity of numbers allocated per service category in the National Numbering Plan and enable the Authority to take the necessary steps, in a timely manner, to mitigate the premature exhaust of the allocations.

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[5] These responsibilities are adapted from the NANPA guidelines
[6] This form replaces the Months to Exhaust Worksheet for justifying additional(growth) codes and is detailed in the Central Office Code Assignment guidelines.
[7] Validation data is data in its raw, unconditioned state

4 Responsibilities of the Authority

After the CO Code Exhaust Methodology is adopted by the Authority, the Authority will be responsible for the following[8]:

1. The effective and efficient management of the numbering resources in the allocated NPA.;
2. Compilation of submitted utilization and forecast data and the preparation of the CO code exhaust report ;
3. Issuance of the exhaust report sixty working days after the receipt of verifiable data;
4. Initiating mitigation techniques to prevent premature exhaust of the allocations in the National Numbering Plan and NPA;
5. To make rules for the issuance of numbers allocated to end users so that the numbering resource is efficiently utilized;
6. Initiating the process for having another NPA allocated to Trinidad & Tobago should the current NPA be near exhaust;
7. Safeguarding the confidentiality of the data provided by the concessionaires;
8. Penalties being levied on concessionaires who are non compliant and who do not respond to queries on the submitted data by the stipulated due dates; and
9. Providing the NANPA with a utilization and forecast report on an annual basis for the NPA assigned to Trinidad & Tobago.

[8] These responsibilities are adapted from the NANPA guidelines

5 Proposed CO Code Exhaust Methodology

The proposed methodology uses an average rate of assignment of numbers, also called growth of assigned numbers, to determine an expected exhaust date of the currently allocated numbers to concessionaires. The average rate of assignment is derived by using the historical rate of assignment of numbers over a minimum of six months and the forecasted rate of assignment of numbers over the immediate three (3) year period. This average rate of assignment of numbers, so derived, is used to project an exhaust date for the quantity of numbers currently allocated to concessionaires as well as the NPA for Trinidad and Tobago.

In addition to the assignment rate of numbers (historical and forecasted), the Authority will take into consideration such factors as:

1. The current occupancy of the individual CO Codes used for any public telecommunications service;
2. Projected usage of numbers by concessionaires;
3. Historical assignment rate;
4. Demographic changes; and
5. Market changes.

Since competition is relatively recent in Trinidad and Tobago, a profile of the assignment rate for numbers for each concessionaire has to be established to assist the Authority in planning for an adequate supply of numbers to each concessionaire. For instance, the Authority considers that the historical data from April 2006 should be used as the starting point for the assignment of mobile numbers, as this was the time that mobile competition was introduced in Trinidad and Tobago. As there is currently no competition for fixed line services , historical data from January 2007 to December 2007 will suffice. Upon implementation of the methodology, historical data on number assignments for both fixed lines and mobile will be requested from the concessionaires on a quarterly basis up to the current year, after which, the number assignments will be requested on a monthly basis. See Appendices 2 and 4. The concessionaires' number assignment forecast will be required for the next three years as this will provide the Authority with data to determine the quantity of

numbers to have available for concessionaires as well as to project an exhaust date for the currently allocated numbers in the National Numbering Plan for Trinidad and Tobago.

5.1 CO Code Occupancy

The current occupancy of the individual CO codes will guide the Authority as to what quantity of numbers in the CO code has been used. Occupancy thresholds for both fixed line and mobile services have been established so that new CO codes can be assigned to the concessionaires in a timely manner so as not to put the concessionaires at a disadvantage by not having enough numbering resources to provide service to customers.

5.2 Concessionaire Projected Usage

Concessionaire usage forecast will be used to guide the Authority in determining the quantity of numbers that the concessionaire expects to be in service per CO code over the next three years. While it is expected that there will be growth in the networks, it is normal that customer churn will be experienced as competition increases. Entrance of new concessionaires will also affect the forecasts of the existing concessionaires and should be taken into account by the Authority in determining the forecasted quantity of numbers required.

5.3 Historical Assignment Rate

The historical assignment rate per CO code will provide a guide as to the rate at which assignments are being made by the concessionaires. This will guide the Authority in determining the reasonableness of the forecast provided by concessionaires and the need to assign new CO codes to the rate centre (refers to fixed line only) which may be in jeopardy of exhaust. It is recognized that there is a different assignment rate for fixed line services as opposed to mobile services and these services are treated separately.

5.4 Demographic Changes

The Authority will also take into account any demographic changes that are likely to affect the demand for numbers.

5.5 Market Changes

The Authority will also take into account the effects of any changes to the market which can impact the forecasts provided by the concessionaires to maintain reasonableness in the data used to calculate the CO code exhaust for the different service categories.

6 Application of Growth Rate

The NANPA model[9] for the application of growth rate[10] provides three options to determine Central Office growth based on the data provided by service providers. It should be noted that NANPA's model does not distinguish between fixed line and mobile services with regard to the allocation of CO codes and the concessionaire's utilization threshold for the assignment of growth codes. Due to the infancy of competition in Trinidad & Tobago, the Authority considers that it would be more appropriate to treat fixed line and mobile services separately with respect to allocation of CO codes and utilization thresholds. The options used by NANPA are as follows:

1. Fixed line:
    a. *Uniform application of the Number Utilization forecast across all exchange areas.*

       It assumes that there will be uniform growth across all exchange areas in the NPA. The growth is spread across existing exchange areas at a rate proportional to the percentage of existing codes in that exchange area. For example, the model allocates twice as many growth codes to an exchange area with twelve codes than it would to an exchange area with six codes. The growth may be distributed among the exchange areas in anticipation of events that will occur during the planning period.

    b. *Individual exchange area historical growth rate*

       In this option, the forecasted growth is distributed in proportion to the previous year's observed growth in each exchange area e.g. an exchange area that grew by nine central office codes in the preceding year will be allocated three times the number of growth codes as will an exchange that had growth of only three codes in the previous year. The growth may be redistributed among the exchange areas in anticipation of known events that will occur during the planning period.

[9] www.nanpa.com/relief_planning/model_description.html
[10] Growth rate is used interchangeably with rate of assignment

c. *Manual input*

The historical growth rate for each exchange area, knowledge of events and the concessionaires' forecast in each exchange area are used for determining the expected growth.

2. Mobile services

The NANPA issues growth CO codes to mobile operators when the utilization threshold of assigned CO codes is 75% or greater as is the case for fixed line operators. The Months to Exhaust Certification Worksheet which is required to justify the request provides the NANPA with the historical growth of assignment data for six (6) months and the forecast growth data for twelve (12) months.

6.1 Proposed Application of Growth Rate

The Authority proposes to use the manual input method to assess the growth of fixed line and mobile services due to the recent introduction of competition in the mobile market and the soon to be launched competition in the fixed line market. There are no established patterns in the market in either of the services at this time, and therefore, the following guidelines will be used:

a) Fixed services

The Authority will use the manual input method to determine future growth for fixed services. This is due to insufficient historical growth records on which to base future growth for fixed services. In addition to the concessionaires attaining a utilization of 80%, the following factors will be used in developing the future growth rate and hence the exhaust of the assigned CO codes:

- Occupancy of currently assigned CO codes;
- Pent up demand;
- Concessionaire's forecast;
- Competitive climate;
- Economic factors; and
- Demographic changes.

A regression analysis will be used to determine the growth rate and the 'best fit' line will be used to forecast exhaust. The main assumption of this methodology is that the historical growth data is accurately reported and the forecast values are realistic.

b) Mobile services

Mobile numbers are not tied to an exchange area. Insufficient historical growth records due to the infancy of competition in this market means that a manual method of determining the future growth and the exhaust of CO codes for mobile concessionaires will be used. Other considerations on which the future growth and exhaust of CO codes for mobile services will be based are as follows:

- the occupancy of the current CO codes assigned to mobile concessionaires;
- the historical growth rate of assignment of numbers to end users;
- three year forecast of demand;
- economic factors; and
- competitive climate.

Regression analysis will be used to obtain the 'best fit' curve to determine the exhaust for mobile CO codes. The main assumption of this methodology is that historical data will be accurately reported and forecasted values will be reasonable.

7 Proposed Determination of CO code Exhaust

The Authority proposes to adopt the following process to determine the CO Code Exhaust. This determination will inform the allocation of CO code to services in the National Numbering Plan for Trinidad and Tobago.

1. Request the concessionaires to supply historical data for their CO code utilization on the prescribed forms along with marketing programme schedules for the stipulated periods;
2. Use the historical information to build a profile of Number usage by concessionaire, by service category and by CO code;;
3. Request forecast information on the demand for numbers for the next 3 year period and construct a profile of number usage by concessionaire and service category;;
4. Use the historical and forecast data to determine the growth rate in the issuance of CO codes;
5. Based on the growth rate in the issuance of CO codes, determine the timeframe for the exhaust of fixed and mobile numbers;
6. Request historical and forecasted usage information on a semi annual basis to refine process; and
7. Implement measures to promote efficient utilization of numbers and so mitigate the premature exhaust of the allocated numbers as per the Numbering Plan.

7.1 The Data to Determine CO Code Utilization

A template has been created in Microsoft Excel to record the assignment of Numbers, by CO code that has been issued to the concessionaires. This will serve the following purposes:

1. To confirm which CO codes are currently issued to the concessionaires;
2. To identify any errors in the records of the Authority regarding CO codes issued by the Authority;
3. To provide the number fill in each CO code used by the concessionaire; and
4. To show the practice of concessionaires' number assignments.

7.1.1 Assignment Rate Trend

The historical assignment rate or growth data requested is from 2004 to the current year. This will enable the Authority to establish a benchmark for number assignment rates for fixed and mobile services separately. The data is required on a quarterly basis and will assist the Authority in understanding the rate of utilization for that period as well as the assignment trend by service category. The data for the twelve month period prior to the current date is requested on a monthly basis as this will give the Authority a better understanding of the demand for numbers and the trend of the assignment rate.

Information on promotions should also be supplied with the data as this will assist the Authority in assessing the reason for changes in the number assignment rate. This information may be restricted to the prior twelve month period.

The forecast of number assignment on an annual basis for three years after the current period will be requested. This will be used in determining the exhaust date of the CO codes assigned for fixed and mobile services as per the National Numbering Plan.

7.2 Concessionaire's Data Submission Template

Concessionaires will be supplied with the template for their input of the quantity of assigned numbers for each of the CO codes issued to them. The template records data for fixed line concessionaires on Form COCUR 01 and mobile concessionaires on Form COCUR 02 separately due to the different rates of utilization between the services and to enable the Authority to make judicious comparisons. See Appendices 2 and 4.

Using the different templates

The data to be requested will be on a concessionaire basis by type of service and processed as such by the Authority. The reasons for that are:

1. Data collected in this format will permit the assignment rates for each service to be determined individually. The historical and forecasted quantities of numbers for the various categories of services supplied by a concessionaire are essential for validating

a request growth CO code. The forms used for this exercise are as follows and are described in 7.2.1:

- COCUR 01- historical fixed line data;
- COCUR 01-01 forecast fixed line data;
- COCUR 02 – historical mobile data; and
- COCUR 02-01 forecast mobile data.

2. To analyse the forecast data supplied by the concessionaire. The Authority will do so on the following forms:
    - TATT HF – 0X - Historical fixed data;
    - TATT FF – 0X - Forecast fixed line data;
    - TATT HM – 0X –Historical Mobile data; and
    - TATT FM – 0X – Forecast Mobile data.

    Where 0X = concessionaire code

3. To determine whether the rate of assignment projected in a previous period of study was achieved or not by comparing the forecast for the immediate past period and the actual. This will guide the Authority as to whether the assignment rate should be adjusted and a new CO code exhaust date determined for the service category.

4. The collation of data on the historical and forecasted growth of numbers assigned for each CO code (obtained from items 1-3 above) for all categories of services on a concessionaire basis will provide a profile of the assignment rate of numbers for the concessionaire. The forms used for this are as follows (see Appendix 10 and 11):
    - COCUR 03 F – 0X Summary of Fixed line data for concessionaire 0X ; and
    - COCUR 03 M – 0X Summary Mobile data for Concessionaire 0X.

    Developing a profile of the assignment rate of numbers for the concessionaires gives the Authority a method by which to monitor their compliance to number assignment procedures and the efficiency of their processes. Forms may be devised by the Authority for other services using Number resources.

5. The totals of all the numbers assigned by CO code as historical data and forecasted demand for numbers by all the concessionaires are transferred to *The Summary of Number Utilization Sheet COCUR O4* (Appendix 12). Using this summary and a regression analysis, the CO code exhaust for fixed lines and Mobile will be determined as per the Trinidad & Tobago Numbering Plan.

   In addition, the projected exhaust of CO codes in the 868 NPA will be determined from this process.

7.2.1 Use of Data Submission Template

7.2.1.1 Historical Fixed line Worksheet- Form COCUR 01

The Form COCUR 01 (in Appendix 2) is used for reporting historical Central Office code assignment data for fixed line services. This form for historic fixed line number information will be used initially to establish a benchmark to determine the historical assignment rate of fixed lines in the individual exchange areas. The concessionaire will complete the required administrative information fields. The name of the exchange being reported on and the date of the report will be entered in the appropriate field.

All exchanges will be listed in Column 1 and the associated Central Office Codes assigned to the particular exchanges will be listed in column 2. The quantities of numbers assigned in each Central Office Code in each column will be the quantity of numbers assigned as at the time period being reported on. The report is **NOT** asking for the incremental figures but the total quantity assigned as of that date and is the cumulative total i.e. the assigned lines for the current period includes the assigned lines for the previous period.

7.2.1.2 Forecast Fixed line Worksheet COCUR 01-01

Form COCUR 01-01 (in Appendix 3) is used for reporting forecast Central Office Code assignment data for fixed line services on the following basis for the next three (3) years:

- Year 1 – monthly basis;
- Year 2- quarterly basis; and
- Year 3- annual basis.

The concessionaire will complete the required administrative information fields. The name of the exchange being reported on and the date of the report will be entered in the appropriate field.

All exchanges will be listed in Column 1 and the associated Central Office Codes assigned to the particular exchanges will be listed in column 2. The forecasted quantities of numbers assigned in each Central Office code in each column will be the quantity of numbers assigned as at the time period being reported on. The report is **NOT** asking for the incremental figures but the total quantity assigned as of that date and is the cumulative total i.e. the assigned lines for the current period includes the assigned lines for the previous period.

7.2.1.3 Historical Mobile Worksheet COCUR 02

The Form COCUR 02 (in Appendix 4) is used for reporting historical mobile Central Office code number assignment data. This form for historical mobile number information will be used initially to establish a benchmark to determine the assignment rate for numbers used for mobile services.
The concessionaire will complete the required administrative information fields. The CO code and the date of the report will be entered in the appropriate field.

The Central Office codes issued to the concessionaire for the provision of mobile services will be listed in Column 1. The quantities of numbers assigned in each Central Office code in each column will be the quantity of numbers assigned as at the time period being reported on. The report is **NOT** asking for the incremental figures but the total quantity assigned as of that date and is the cumulative total i.e. the assigned lines for the current period includes the assigned lines for the previous period.

7.2.1.4 Forecast Mobile Worksheet COCUR 02-01

The Form COCUR 02-01 (in Appendix 5) is used for reporting forecast mobile Central Office code number assignment data. The concessionaire will complete the required

administrative information fields. The CO code and the date of the report will be entered in the appropriate field.

The quantities of numbers expected to be in service at the particular quarters for the forecasted years will be entered in row 20. The quantities of numbers forecasted to be assigned in each quarter for the three years under consideration will be the quantity of numbers assigned as at the time period being reported on. The report is **NOT** asking for the incremental figures but the total quantity assigned as of that date and is the cumulative total i.e. the assigned lines for the current period includes the assigned lines for the previous period.

7.2.1.5 Utilisation Fixed and Mobile Worksheet COCUR 05

The form COCUR 05 (see Appendix 1) must be completed for each CO code being reported on, whether they are being used for fixed line or mobile services. The form COCUR 05-F must be used for fixed lines and COCUR 05-M must be used for mobile services. The quantities of numbers used must be reported on a semi annual basis by Service category (defined in Section 4.0) and in the following number states (at a minimum) as follows:

- Assigned;
- Reserved;
- Aging; and
- Administration.

The Authority will calculate the quantity of available numbers by the formula

Available numbers = 10,000 – (assigned + reserved + aging + Administration)

And the occupancy of each CO code is calculated by the formula

$$\textbf{Occupancy (\%)} = \left(1 - \frac{\text{available numbers)}}{10000}\right) \times 100$$

$$= \frac{\text{Total quantity numbers assigned}}{} \times 100$$

Total quantity of numbers issued

These formulae will guide the Authority in determining whether a CO code is in jeopardy of exhaust. The Form COCUR 05 will provide the Authority with details on the quantity of numbers assigned in the various categories so that all numbers in a CO code will be accounted for. This will reveal areas where numbers are underutilized or wasted.

7.3 Collation of Data Supplied by Concessionaires

1. The data supplied by the concessionaires on numbers assigned for fixed line and mobile CO codes will be imported into the Authority's concessionaire summary sheets as follows:
    - Form TATT COCUR HF-0X* for historical fixed line data by concessionaire- Appendix 6;
    - Form TATT COCUR FF-0X* for forecast fixed line data by concessionaire- Appendix 7;
    - Form TATT COCUR HM-0X* for historical mobile data by concessionaire – Appendix 8; and
    - Form TATT COCUR FM-0X* for forecast mobile data by concessionaire- Appendix 9.

HF = Historical Fixed lines	*0X = ID code assigned to Concessionaire
FF= Forecast Fixed lines	01= TSTT
HM= Historical Mobile Lines	02= Digicel
FM= Forecast Mobile lines	03= Laqtel
	04= CCTL

The data on these forms will be the source information for the Authority to determine usage and exhaust of CO codes.

2. The Data supplied by the concessionaires on the Form COCUR 05 (Appendix 1), the CO code number assignment by category, will be imported to the TATT summary sheets as follows
   - Form TATT COCUR 05 F – 0X for fixed line providers (F means Fixed); and
   - Form TATT COCUR 05 M – 0X for mobile concessionaires (M means Mobile).

   The data on these forms will provide the Authority with information on exactly how the numbers have been assigned.

7.4 Validation of Data

Validation of the information supplied by concessionaires will be done from time to time and as required using Form COCUR 05 in Appendix 1. The Authority may conduct the validation exercise in the following manner:

a) Request that the concessionaires provide data on COCUR 05-Fixed and COCUR 05-Mobile with respect to the CO codes that have been issued to them in the following format:

1. Quantity of numbers in their *raw* number state as obtained from the billing/administration systems for each CO code;
2. Definitions of each number state used; and
3. The date the report was generated.

These reports will be required to show the information on a monthly[11] basis as this granularity will assist the Authority in conducting its analysis and must be available in ten (10) working days from the date of request from the Authority.

b) Inspection of the records at the concessionaires' premises in accordance with the Telecommunications Act of 2001. An inspection following the request for validation data, if required, will be done within 30 days of submission of said data.

Validation of data may also be requested if errors of the order of 5% are detected in the data submitted by concessionaires.

[11] The reports should show the states of numbers as at the end of the month being reported on.

7.5 Worksheet Analysis

7.5.1 CO code Exhaust determination

Form COCUR 03 (in Appendix 11) is used to collate all the CO codes historical and forecast data supplied by the concessionaire on a single sheet as follows:

- TATT COCUR 03 F -0X Fixed line - F= Fixed 0X = ID code for concessionaire – Appendix 10; and
- TATT COCUR 03 M-0X - M= Mobile 0X = ID for concessionaire- Appendix 11.

The Authority will be able to review the information displayed on these forms for trends and anomalies in the numbers assigned per CO code. The information also provides the Authority with the exhaust potential of CO codes for fixed lines and mobile numbers independently as assignment rate and the forecast usage for each sector can be judged. Actions to mitigate the lack of numbers due to exhaust of CO codes can then be initiated.

7.5.2 NPA Exhaust Determination

The total of number usage in all CO codes issued to the concessionaires and the forecast for a three year period is now transferred to TATT COCUR 04 – Summary of Number Utilization (Appendix 12) irrespective of the types of concessionaires. This summary of usage of all the issued CO Codes in the 868 NPA will guide the Authority as to the rate of consumption in the CO code in the NPA and so determine exhaust of the NPA.

7.6 Trending Analysis

The trending analysis tool in Microsoft Excel will be used to determine the future exhaust of the following number allocations as per the National Numbering Plan:

- Fixed line;
- Mobile; and
- The NPA.

A ***best fit*** trend line, based on the historical and forecast, will be used to project the exhaust date

See Appendix 13 for an example using Mobile number assignment.

8 Number Conservation

Effective management of the numbering resources necessitates that some number conservation methods[12] be implemented as early as possible to ensure that there is an orderly and managed usage of numbers which are a finite resource. Number conservation methods are used for the following purposes:

- to avoid premature exhaust of the number supply;
- to maintain availability of numbers to all concessionaires to sustain competitiveness;
- to minimize incentives for concessionaires to store excessively large inventories for numbers; and
- to permit the allocation of numbers to more closely match the requested quantity of number.

8.1 Current Number Conservation Methods

The Authority proposes to adopt one or more of the conservation methods used by other administrations as follows:

1. Mandate that concessionaires produce accurate and timely number utilization and forecasts on a semi annual basis;
2. Define the categories of numbers for which reporting must be done;
3. Define the utilization threshold to increase concessionaire accountability;
4. Incentives to use numbers efficiently;
5. Reclaim numbers/CO codes not in use;
6. Reduce aging period of disconnected telephone numbers;
7. Reduce the issuance of numbers from 10,000 blocks to 1000 blocks which will necessitate number pooling be introduced;
8. Mandate that numbers be assigned from the current "open" thousands blocks to reduce contamination of unused thousands blocks; and

[12] Number conservation methods are placed here for information purposes only

9. Introduce number portability so that customers of both mobile and fixed services can change their concessionaire without having to change their telephone numbers..

8.2 Reports

Effective monitoring of the CO code utilization and forecasts of the concessionaires will enable the Authority to maintain sufficient quantities of numbers for concessionaires to provide service to their customers.

The reports presented in this document for acquiring data from concessionaires are:

- COCUR 01- Historical Fixed line data;
- COCUR 01-01 Forecast Fixed line data;
- COCUR 02 Historical Mobile data; and
- COCUR 02 -01 Forecast Mobile data.

are required for determining a baseline for CO code usage in the years 2006 to the present.

After the baseline has been established, the COCUR reports[13] will require data for both fixed line and mobile to be submitted as follows:

- Historical information on numbers assigned on a monthly basis for the past six months
- Forecast information for the next three (3) years shown in the following detail
    - Monthly assignments for the first year;
    - Quarterly assignments for the second year; and
    - Annual assignment for the third year.

These COCUR reports are required semi-annually and will be due on March 31 for period July1 to December 31 for the previous year and September 30 for the period January 1 to June 30 for the current year.

[13] COCUR 01, COCUR 01-01, COCUR 02 and COCUR 02-01

8.3 Definition of numbers

The numbers to be reported on have been defined in section 4.0 above.

8.4 Number Utilization Threshold

If the numbering resources are to be effectively managed, there must be a number utilization threshold that will initiate the issuance of a growth CO code. In Trinidad & Tobago, it is estimated that the growth of fixed line is slowing as the pent up demand for fixed telephone service is being satisfied by mobile telephone service. The growth of mobile telephone services has been exponential and the rate of assignment exceeds that of fixed line. With this in mind, it is recommended that the following thresholds be used for the triggering of growth CO codes:

- fixed line – 80 % ;
- mobile – 75 %; and
- the concessionaire's available numbers for fixed or mobile services will exhaust in six months or less.

NANPA CO code utilization requirement before a new CO code could be assigned is currently 75% [14] for both fixed line and mobile services and the current stock of numbers held by the concessionaire must exhaust in less than six months[15].

The increase of thresholds which trigger the issuance of new CO codes for fixed line and mobile services is another method of conserving numbers.

8.5 Incentives for Efficient Use of Numbers

The Authority has taken measures early in its tenure as Administrator of the numbering resource to create an orderly and efficient use of this finite resource. The following incentives are currently used to encourage efficiency.

---

[14] Federal Communications Commission telephone number utilization requirement before a new CO code is issued is 75% and the current stock of numbers held by the concessionaire must exhaust in less than six months.
[15] Criteria on NANPA's "Months to Exhaust Worksheet"

1. Charging a number fee for numbers issued to the concessionaires whether they have been assigned or not will provide inducement for them to use them efficiently. It should be noted that many European countries also charge for numbers as an incentive for improved efficiency in number utilization[16]; and
2. Withholding of additional numbers should there be non compliance by concessionaires in respect of efficient utilization of numbers.

Adherence to number utilization criteria such as:

- use of numbers in sequential order in the "open" thousands block;
- assignment of numbers up to a 90% occupancy level of the currently open thousands block before a new thousands block is opened up; and
- adequate justification for growth CO Codes requests will redound to the benefit of the concessionaire in the expediting of requests for CO codes.

.

8.6 Reclamation of Codes not in use

The Authority will move speedily to recover unused codes so that they may be reissued in an agreed to timeframe. Prior to reclamation of unused CO codes, the Authority will contact the concessionaire for an explanation as to reasons for the code not being put into use within six (6) months of it being issued.

8.7 Reduction of Aging period

The concessionaires are encouraged to recycle disconnected numbers back into service as the earliest opportunity. This will improve the utilization of numbers and delay the need for new numbers.

[16] http://www.ofcom.org.uk/static/archive/oftel/publications/1995_98/numbering/dna798.htm

8.8 Reduction in Block Size

In the event that this measure becomes necessary, the telephone numbers will be issued in block sizes of one thousand rather than ten thousand. The numbers will be held by a pooling administrator who will then issue numbers in a range of one thousand blocks within the same rate area to the concessionaires. The routing of calls will consequently be on the fourth digit of the telephone e.g. NXX-X as the NXX will be used on multiple switching entities.
This method seeks to promote a higher efficiency of usage of numbers within the same rate area (refers to fixed line) among the various concessionaires.

8.9 Assignment from "Open" Thousand Blocks

The practice of assigning numbers from "open" thousand blocks only, except for special applications such as golden numbers, could be mandated as it will prevent the contamination of thousand blocks which are not immediately required for providing services to end users. This practice, while not needed to be implemented when the NPA is not in jeopardy, ensures that the numbers are efficiently used.

8.10 Number Portability

The Authority plans to consult stakeholders on Number Portability shortly. Number portability is a method of number conservation which has the added benefit of allowing end users to keep their telephone number when they change concessionaire or location. This method of conservation can be used in conjunction with number pooling to extend the life of the NPA. This option has some significant costs associated with it.

Appendix 1

CO Code Utilization Worksheet- COCUR 05- F (Fixed line)

The purpose of this Worksheet is to determine the utilization and occupancy of the CO code based on the historical data provided below.

Name of Concessionaire……

Registered Address of Concessionaire….....

Type of service provided …….

Name of Authorised contact……

Position of Authorised contact……

Tel……. Cell…… Fax……. e mail……...

Switch ID (fixed line only)…… CO Codes issued……..

Year:

CO Code NXX	Service Categories	Assigned Numbers (A)	Administrative Numbers (B)	Reserved Numbers (C)	Non Recycle Numbers (D)	Total Quantity of Numbers Assigned (E)

Total Quantity of numbers assigned (E) = A+B+C+D

Occupancy[17] (%) = Sum of Total Quantity of numbers assigned (∑ E) x 100

Total Quantity of numbers issued

[17] An additional CO code will be issued when (1) the occupancy is 80% for wire line services and 75 % for mobile services and (2) the current stock of numbers held by the concessionaire will exhaust in less than six (6) months. This may be varied in light of the historical /current rate of assignment.

CO Code Utilization Worksheet- COCUR 05- M (Mobile)

The purpose of this Worksheet is to determine the utilization and occupancy of the CO code based on the historical data provided below...

Name of Concessionaire……

Registered Address of Concessionaire….....

Type of service provided …….

Name of Authorised contact……

Position of Authorised contact……

Tel……. Cell…… Fax……. e mail……...

Year: CO Codes issued …….

CO Code NXX	Assigned Numbers (A)	Admin Numbers (B)	Non Recycle Numbers (C)	Roam/ test (D)	Defined by Concessionaire* (E)…….	Total Assigned Numbers (G)

* Any other defined categories that the billing system puts numbers into.

Total Quantity of numbers assigned (G) = A+B+C+D+E

Occupancy[18] (%) = Sum of Total Quantity of numbers assigned (∑ G) x 100

Total Quantity of numbers issued

[18] An additional CO code will be issued when (1) the occupancy is 80% for wire line services and 75 % for mobile services and (2) the current stock of numbers held by the concessionaire will exhaust in less than six (6) months. This may be varied in light of the historical /current rate of assignment.

Appendix 2

Concessionaire Form COCUR 01- Fixed line Historical data

FORM COCUR 01

Historical Fixed line data

Central Office Code Utilisation Report

Name of Concessionaire

Registered address of Authorized Provider

Name of Reporting Officer

Address of Reporting Officer

Tel. no fax no. e mail

Exchange Location Date

CO Code - Fixed line

NXX		2006	2006	2006	2007											
Exchange	CO Code	Qtr 1	Qtr 2	Qtr 3	January	February	March	April	May	June	July	August	September	October	November	December
	621															

Nelson	623
	624
	625
	626
	627
	821
West	615
	622

Appendix 3

Concessionaire Form COCUR 01-01 – Fixed line Forecast data

Trinidad & Tobago Telecommunications Authority FORM COCUR 01-01

Central Office Code Utilisation Report Forecast Fixed line Report

Name of Concessionaire
Registered address of Authorized Provider
Name of Reporting Officer
Address of Reporting Officer

	Fax	
Tel. no	no.	e mail

Exchange Location Date

CO Code - Fixed line

		2008								2009				2010
Exchange	CO Code	Jan	Feb	Mar	April	May	June	July	Aug…….	Qtr 1	Qtr 2	Qtr 3	Qtr 4	annua
Nelson														
West														
St														
Augustine														
Arima														
Piarco														

Appendix 4

Concessionaire Form COCUR 02- Mobile Historical data

Trinidad & Tobago Telecommunications Authority

FORM COCUR 02
Historical Mobile Report

Central Office Code Utilisation Report

Name of Service Provider
Registered address of Authorised Provider
Name of Reporting Officer
Address of Reporting Officer

Tel. no fax no. e mail

Date

CO Code - Mobile

NXX	2006 Qtr 2	2006 Qtr 3	2006 Qtr 4	2007 January	February	March	April	May	June	July	August	September	October	November	December

Appendix 5

Concessionaire Form COCUR 02-01 Mobile Forecast data

Trinidad & Tobago Telecommunications Authority

FORM COCUR 02-01

Forecast Mobile Report

Central Office Code Utilisation Report

Name of Concessionaire

Registered address of Authorized Provider

Name of Reporting Officer

Address of Reporting Officer

Tel. no fax no. e mail

Date

CO Code -

Mobile

NXX	2008							2009				2010
	Jan	Feb	Mar	Apr	May	Jun…..	Dec	Qtr 1	Qtr 2	Qtr 3	Qtr 4	annual

Appendix 6

TATT Form COCUR HF -0X Historical Fixed line data for Concessionaire

Trinidad & Tobago Telecommunications Authority TATT FORM COCUR HF -0X

Central Office Code Utilisation Report Concessionaire Historical Fixed line Report

Name of Concessionaire
Registered address of Authorized Provider
Name of Reporting Officer
Address of Reporting Officer

Tel. no Fax no. e mail

Exchange Location Date

CO Code - Fixed line

Exchange	CO Code	2006 Qtr 2	2006 Qtr 3	2006 Qtr 4	2007 January	February	March	April	May	June	July	August	September	October	November	December
Nelson	621															
	623															

	624
	625
	626
	627
	821
West	615
	622

Appendix 7

TATT Form COCUR FF -0X Forecast Fixed line data for Concessionaire

Trinidad & Tobago Telecommunications Authority

TATT COCUR FF-0X

Central Office Code Utilisation Report

Concessionaire Fixed line Forecast Report

Name of Concessionaire

Registered address of Authorized Provider

Name of Reporting Officer

Address of Reporting Officer

Tel. no fax no. e mail

Date

CO Code -Fixed line

		2008								2009				2010
Exchange	CO Code	Jan	Feb	Mar	Apr	May	Jun	July…..	Dec	Qtr 1	Qtr 2	Qtr 3	Qtr 4	annual
	621													
Nelson	623													
	624													
	625													

	626
	627
	821
West	615
	622
	628

Appendix 8

TATT Form COCUR HM -0X Historical Mobile data for Concessionaire

Trinidad & Tobago Telecommunications Authority

TATT COCUR HM-OX

Central Office Code Utilisation Report

Concessionaire Historical Mobile Report

Name of Concessionaire

Registered address of Authorized Provider

Name of Reporting Officer

Address of Reporting Officer

Tel. no fax no. e mail

Date

CO Code - Mobile

NXX	2006			2007									
	Qtr 2	Qtr 3	Qtr 4	Jan	Feb	Mar	Apr	May	June	July	Aug….	Sept….	Dec

Appendix 9

TATT Form COCUR FM -0X Forecast Mobile data for Concessionaire

Trinidad & Tobago Telecommunications Authority

TATT COCUR FM-OX

Central Office Code Utilisation Report

Concessionaire Forecast Mobile Report

Name of Concessionaire

Registered address of Authorized Provider

Name of Reporting Officer

Address of Reporting Officer

Tel. no fax no. e mail

Date

CO Code - Mobile

NXX	2008								2009				2010
	Jan	Feb	Mar	Apr	May	Jun	July…..	…..Dec	Qtr 1	Qtr 2	Qtr 3	Qtr 4	annual

Appendix 10

TATT Form COCUR 03 F -0X Summary Fixed line data for Concessionaire

Trinidad & Tobago Telecommunications Authority

TATT COCUR 03 F-0X
Concessionaire Fixed line data

Central Office Code Utilisation Report

Name of Concessionaire
Registered address of Authorized Provider
Name of Reporting Officer
Address of Reporting Officer

Tel. no fax no. e mail

Exchange Location Date

CO Code - Fixed line

NXX Exchange	CO Code	2006 Qtr 2	2006 Qtr 3	2006 Qtr 4	2007 January	February	March	April	May	June	July	August	September	October	November	December
	621															

Nelson	623
	624
	625
	626
	627
	821
West	615
	622
	628

2008											
January	February	March	April	May	June	July	August	Sept	Oct	Nov	Dec

2009				2010
Qtr 1	Qtr 2	Qtr 3	Qtr 4	Annual

Appendix 11

TATT Form COCUR 03 M -0X Summary Mobile data for Concessionaire

Trinidad & Tobago Telecommunications Authority

TATT COCUR 03 M-0X

Concessionaire Mobile data

Central Office Code Utilisation Report

Name of Concessionaire

Registered address of Authorized Provider

Name of Reporting Officer

Address of Reporting Officer

Tel. no fax no. e mail

Date

CO Code -

NXX	2006 Qtr 2	2006 Qtr 3	2006 Qtr 4	2007 January	February	March	April	May	June	July	August	Sept	Oct	Nov	Dec	
	2008 January	February	March	April	May	June	July	August	Sept	Oct….	……Dec	2009 Qtr 1	Qtr 2	Qtr 3	Qtr 4	2010 Annual

Appendix 12

TATT Form COCUR 04 – Summary of Number Utilization

Trinidad & Tobago Telecommunications Authority

TATT COCUR 04

Summary of Number Utilization

Central Office Code Utilisation Report

Name of Concessionaire ALL PROVIDERS

NXX	2006 Qtr 2	2006 Qtr 3	2006 Qtr 4	2007 January	February	March	April	May	June	July	August	September	October	November	December

2008 January	February	March	April	May	June	July	August	Sept	Oct	Nov	Dec	2009 Qtr 1	Qtr 2	Qtr 3	Qtr 4	2010 Annual

Appendix 13

Example of Mobile CO Code exhaust

NXX	2006											
	January	February	March	April	May	June	July	August	September	October	November	December
Total Mobile Digicel				27000	38000	32000	40000	50000	60000	70000	80000	90000
Total mobile TSTT	260000	300000	400000	500000	600000	700000	800000	900000	1000000	1100000	1200000	1300000
Total mobile Laqtel	0	0	0	0	0	0	0	0	0	0	0	0
Total Assigned Mobile	260000	300000	400000	527000	638000	732000	840000	950000	1060000	1170000	1280000	1390000

2007				2008				2009			
Qtr 1	Qtr 2	Qtr3	Qtr4	Qtr 1	Qtr 2	Qtr3	Qtr4	Qtr 1	Qtr 2	Qtr3	Qtr4
150000	230000	280000	350000	425000	505000	595000	695000	805000	925000	1050000	1200000
1310000	1320000	1330000	1340000	1350000	1360000	1370000	1380000	1390000	1400000	1410000	1420000
0	0	0	0	0	0	0	0	0	0	0	0
1460000	1550000	1610000	1690000	1775000	1865000	1965000	2075000	2195000	2325000	2460000	2620000

The figures used here are for illustration purposes only. The top table above shows the growth in number assignment from the year 2006 when competition began in Trinidad & Tobago. The Year 2006 was done on a monthly basis to show the pattern of assignments for the current year. This will enable the Number planner to determine whether forecasts for this year were met or not. The second table shows the forecast of number assignments from 2007 to 2009. These figures are plotted on the graphs below and the trendline shows the rate of assignment of mobile numbers in the nation (fig. 1) as well as the assignment rate of CO codes for mobile services for all mobile concessionaires in the nation. It can be calculated from the equation obtained that the CO code allocation for public mobile telephone service in Trinidad & Tobago of 300 will exhaust by third quarter of 2010 according to this example should the assignment rate remain constant. Fixed line CO codes exhaust is determined in a similar manner. NPA exhaust is done by combining the fixed and mobile number usage and forecasted usage and using the same procedure.

Appendix 14

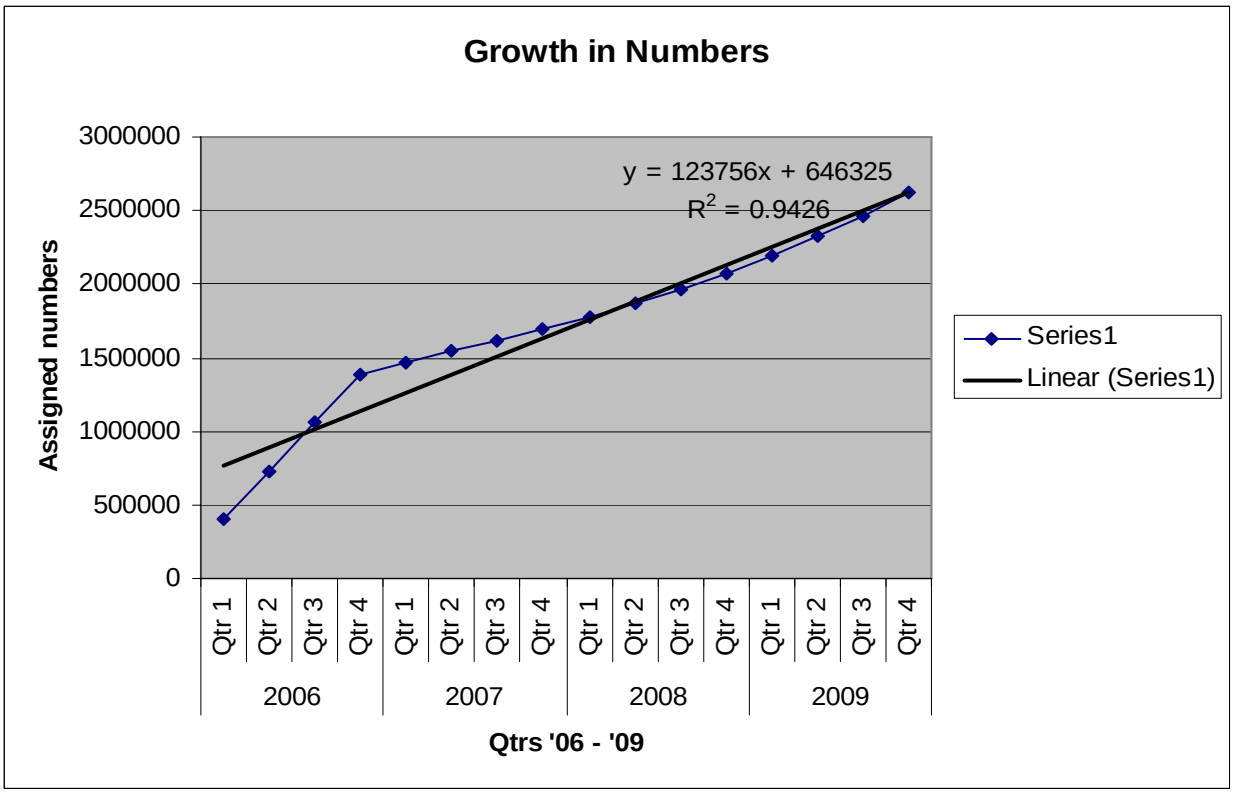
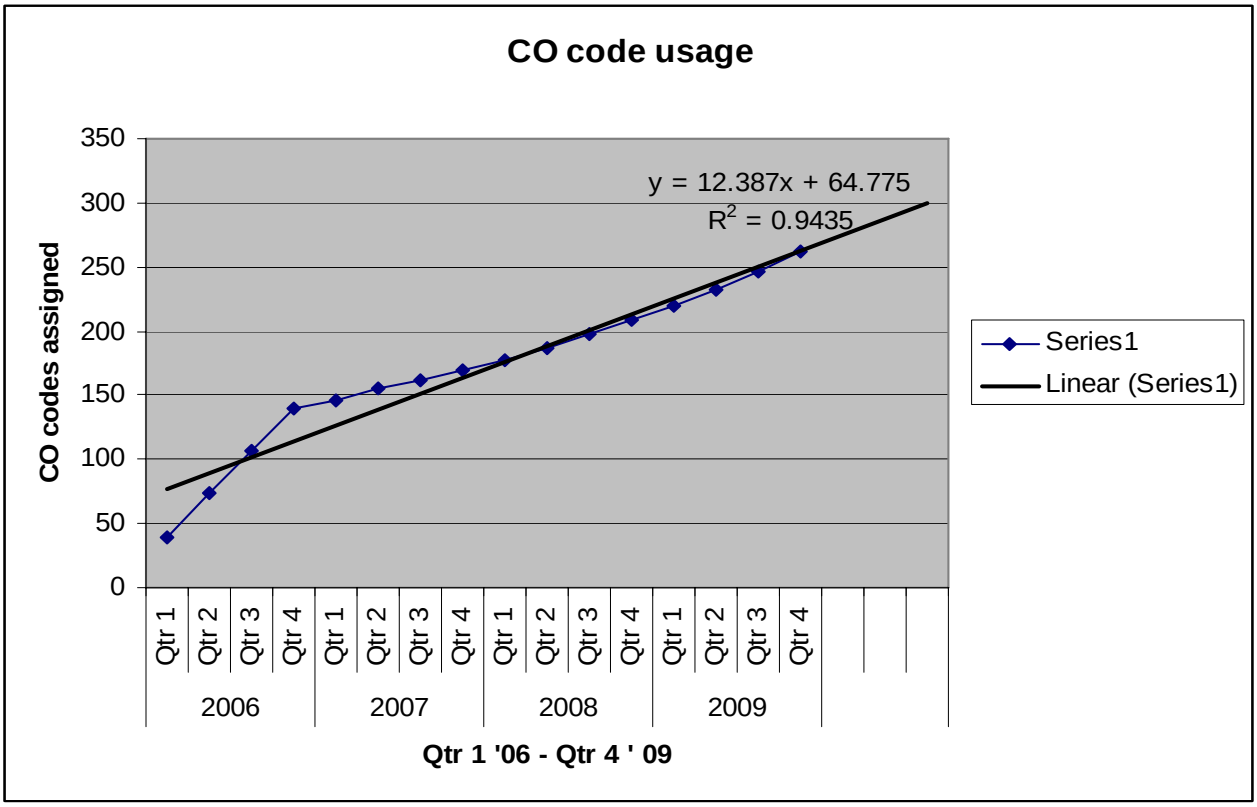


Fig.1

The graph also shows the growth in CO code usage as per the example..

Total number of CO codes issued to mobile concessionaires = 300 which equates to 3000000 numbers.


CO code usage
y = 12.387x + 64.775
R2 = 0.9435
CO codes assigned
350
300
250
200
150
100
50
0
Qtr 1
Qtr 2
Qtr 3
Qtr 4
2006
2007
2008
2009
Qtr 1 '06 - Qtr 4 ' 09
Series1
Linear (Series1)

Appendix 15

Utilisation/ Forecast Reporting Form for CO Code Issuance

☐ **Initial Code request** ☐ **Growth Code Request**

☐ **Fixed line service** ☐ **Mobile service**

Name of Service Provider……

Registered Address of Service Provider…..

Name of Authorised contact…….. Position……..

Tel……. Cell…… Fax……. e mail……...

CO Code[19] …… Switch ID[20]……

Current Number Assignment

Assigned Numbers (A)	Aging Numbers (B)	Reserved Numbers (C)	Total quantity assigned (D)= A+B+C	Available Numbers = Total Qty. issued - D

Assignment History[21]

Month 1	Month 2	Month 3	Month 4	Month 5	Month 6

Assignment Forecast[22]

Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Month 7	Month 8	Month 9	Month 10	Month 11	Month 12

Date…… Authorized signature……

[19] Fixed line: list CO codes assigned to Exchange for which additional numbers are required
Mobile: list all CO codes assigned
[20] Fixed lines: Name of exchange which will provide the service
[21] The actual cumulative numbers assigned as at each month end and is equal to D for each month
[22] The forecasted cumulative numbers assigned as at each month end

ANNEX I: Decisions on Recommendations

The following summarizes the comments and recommendations received from stakeholders on the first draft of this document (November 1, 2007), and the decisions made by TATT as incorporated in this revised document (February 13, 2008)

Document Sub-Section	Submission Made By Stakeholder	Comments Received	Recommendations Made	TATT's Decisions
General				
	Windward Telecom Ltd	We do not believe that TT will run out of CO codes in the foreseeable future due to a combination of factors including: the absolute population, local number portability and the probable shift from TDM CO numbering to VoIP URL and PC to PC signaling in the longer term. We did a quick review of the document and we must say that it is extremely thorough and far more comprehensive than anything I've seen in North America.		While the submission made some very good points, the Authority has a mandate to manage the number resources for the benefit of all concessionaires.

Document Sub-Section	Submission Made By Stakeholder	Comments Received	Recommendations Made	TATT's Decisions
Section 2 - Definitions				
Numbering Plan	TSTT	It is noted that at Item 7 reference is made to a "Numbering Plan" established for Trinidad and Tobago. As far as TSTT is aware, TATT issued a "Draft National Numbering Plan for Trinidad and Tobago" on the 14th June , 2005 for consultation. TSTT submitted its comments thereon and to date TATT has not published its Decisions or Recommendations with respect to that round of consultation, and further, which is necessary to commence the second round. In the premises, we are unsure therefore as to impact of the current consultation on the former.	The Numbering Plan be finalized in order to provide the relevant umbrella document for Numbering under which this policy will fall.	The results of this methodology will be used to guide the Numbering plan in the allocation of CO codes to different services prior to its second round of consultation. The conservation methods used by other jurisdictions were presented here for information only. The National Numbering Plan, when it is issued for consultation, will have more details on the conservation methods which may be employed by the

Document Sub-Section	Submission Made By Stakeholder	Comments Received	Recommendations Made	TATT's Decisions
				Authority.
Definitions	TSTT	Given that Trinidad and Tobago is a participating country in the North American Numbering Plan(as noted in the consultation on the Draft Numbering Plan).TSTT respectfully submits that the definitions referred to in this consultation would not be more appropriately included in the Numbering Plan for Trinidad and Tobago. This would facilitate one set of definitions being consistently applied in relation to all issues of numbering.	To remove the definitions in this document and include same in the Numbering Plan for Trinidad and Tobago so that any and all documents relating to numbering will contain consistent definitions	Noted. The Authority may consider having the definitions in the next consultation on the Numbering Plan.
Definitions Non recycle numbers & Roam/ test	TSTT	The term "non recycle" is ambiguous. TSTT is unsure whether the intent is to speak to "non-recyclable" numbers or "non-recycled" numbers. It is further submitted that any reference to "non-recycled" or	Clarify and define terms.	Term should be recyclable. Recyclable numbers are numbers that have been removed from the state of "aging" and are now available

Document Sub-Section	Submission Made By Stakeholder	Comments Received	Recommendations Made	TATT's Decisions
		"non-recyclable" numbers, whichever the case would require the opposite to be defined. "Roam/test" also requires a definition.		for assignment to customers. Non Recyclable numbers are numbers that are in the state of "aging" and are not available for assignment. Roam /test numbers are numbers used for testing roaming with other carriers.
Definitions Assigned numbers	TSTT	TSTT queries whether a distinction should be made between numbers that have been assigned but are not yet active and those that have become active. In the current scenario Concessionaires will have to report Available Numbers and Assigned Numbers. After ten(10) working days some Assigned Numbers may therefore revert to Available and it is	It is suggested that a distinction be made between Active and Inactive Numbers.	The definition of "assigned numbers" has been revised in the document.

Document Sub-Section	Submission Made By Stakeholder	Comments Received	Recommendations Made	TATT's Decisions
		uncertain whether this will have any impact on the accuracy of any of the reports submitted in accordance with this Methodology.		
Definitions Aging numbers Business 365 days	TSTT	It is noted that a distinction is made between residential and business customers however it is uncertain what criteria is to be applied to distinguish between same.	It is suggested that the criteria for the differentiation between the two categories of numbers be made clear.	Definitions have been provided in the document.
Section 3 – Responsibilities of the Concessionaire				
(2) " to submit growth codes as required"	TSTT	Reference is made to a "Months to Exhaust Worksheet for growth codes" however it is unclear to which form this refers. At Section 6.1 in the description of the NANPA model(Mobile Services) reference is made to "NANPA's Months to Exhaust Certification		NANPA's "months to exhaust worksheet" can be found at www.atis.org/inc/docs.asp Final INC documents

Document Sub-Section	Submission Made By Stakeholder	Comments Received	Recommendations Made	TATT's Decisions
		Worksheet" ie ATIS -0300051 COCAG Appendix B however we have been unable to access a copy of this form from NANPA's website. The criteria as to when a Concessionaire is required to submit a "Months to Exhaust Worksheet for growth codes" is also unclear. It is queried whether this is only required when a concessionaire has reached its threshold utilization and is seeking additional CO Codes.		Section 3 has been revised to identify the different reports required from the concessionaire. Note: Months to Exhaust Worksheet has been replaced by CO code Issuance: Utilisation /Forecast Form
(3) number utilization and forecast data on a per exchange basis	TSTT	Given that there are currently six(6) concessionaires for Fixed Telecommunications Services it is unclear whether this methodology has taken into consideration that all such concessionaires may not necessarily utilize that same	In this regard it may be prudent to define what an exchange may be for the purposes of this methodology	The Authority expects those with exchanges to submit CO code utilization on a per exchange basis. Others will show CO codes assigned and the utilization

Document Sub-Section	Submission Made By Stakeholder	Comments Received	Recommendations Made	TATT's Decisions
		technology or extent of technology. As such it is uncertain whether all such concessionaires would be in a position to submit this data on a "per exchange" basis. It is also noted that different concessionaires (if they have exchanges in the traditional sense at all) may not necessarily have exchanges covering similar geographic areas. In this regard it is queried what would be the relevance of obtaining this data on this basis.	It is recommended that TATT detail the relevance and methodology in this regard.	The relevance to the Authority is that the utilization of CO codes tied to exchanges, where code sharing cannot be done, can be monitored for efficiency of use of numbers
(4) Validation data required	TSTT	It is unclear what "validation data" would be required but it has been assumed that Section 7.4 Validation of Data covers this issue.	TATT should detail/confirm what is meant by "validation data" in this section.	Validation data is the raw data which may be collected "on site" from the reporting systems of the concessionaire to confirm data which had

Document Sub-Section	Submission Made By Stakeholder	Comments Received	Recommendations Made	TATT's Decisions
	TSTT	In the event that this issue is indeed to be covered under the said Section 7.4 it is submitted that the following information is required to be supplied : the time frames for 1. TATT to request such data; 2. Such data to be supplied by a concessionaire to TATT and 3. Within that period thereafter TATT will conduct the relevant inspection. Furthermore it is unclear what is to occur if this "validation data" is not supplied/completed and the impact on any application for Growth CO Code. It is	TATT should therefore detail the appropriate timeframes accordingly so that compliance with this methodology can be achieved.	previously been reported to the Authority, as is stipulated in the Telecommunications Act 2001 Requests for validation data will be made as required and concessionaires must provide data in ten (10) working days. Inspections will be done within 30 days of submission of validation data.

Document Sub-Section	Submission Made By Stakeholder	Comments Received	Recommendations Made	TATT's Decisions
		submitted that failure to detail this procedure will inevitably result in uncertainty and would be unfair to concessionaires.		
Section 4 – Responsibilities of the Authority				
Preparation, issuance of exhaust report; Providing NANPA with utilization and forecast report on an annual basis	TSTT	Reference is made to the preparation of" the CO code exhaust report" and issuance of same sixty(60) working days after receipt of verifiable data. Also it is assumed that this report is to be issued to NANPA. However it is queried what the format of this report would be and whether the concessionaires would be entitled to receive a copy of same. In this regard it is noted that Concessionaires are required to submit utilization and forecasting data on a semi-	TATT should confirm to whom any reports are to be issued and whether concessionaires may receive copies of same.	The Exhaust report will contain aggregate information that is not specific to any individual concessionaire, but to the CO codes assigned by the Authority. As a result this report can be made public.

Document Sub-Section	Submission Made By Stakeholder	Comments Received	Recommendations Made	TATT's Decisions
	Digicel	annual basis however TATT is only required to submit a report to NANPA on an annual basis. The consultation document states that the Authority is responsible for the "issuance of the exhaust report sixty working days after the receipt of verifiable data". Digicel would like to know whether this report is going to be made available to the public	The document should clearly state the parties that are allowed to view this report after it is produced.	The Exhaust report will contain aggregate information that is not specific to any individual concessionaire, but to the CO codes assigned by the Authority. As a result this report can be made public.
To make rules for the issuance of numbers allocated to end users.	TSTT	Given that TATT is to be responsible for the development of "rules for issuance of numbers allocated to end users so that the numbering resource is efficiently utilized" it is queried whether this would be more	It is suggested that any additional rules governing the efficient utilization of CO Codes be consulted upon.	The Authority will consult as necessary.

Document Sub-Section	Submission Made By Stakeholder	Comments Received	Recommendations Made	TATT's Decisions
		appropriately covered in the Numbering Plan or separate methodology. Furthermore it should be clarified that because any such rules will affect concessionaires whether this would form the basis of a separate consultative document.		
To determine penalties for non-compliant concessionaires .	TSTT	While reference is made to the development of penalties for non compliance with this methodology we have not been provided with any details thereof.	TATT should provide details of the relevant penalties proposed in order that they can be appropriately consulted upon.	The Authority may withhold issuance of numbers for non compliance with this methodology without prejudice to other actions which may be taken under the Telecommunications Act 2004, as amended.

Document Sub-Section	Submission Made By Stakeholder	Comments Received	Recommendations Made	TATT's Decisions
	Digicel	The document states that the Authority will have the responsibility of " penalties being levied on concessionaires who are non compliant and who do not respond to queries on the submitted data by the stipulated due dates." Digicel would like to point out that the 'penalties' being referred to have not been explained any further for the benefit of stakeholders	The methodology needs to make clear the penalties that will be levied on concessionaires, so that there is no possibility of ambiguity and/or discrimination if it becomes necessary to apply such levies.	The Authority may withhold issuance of numbers for non compliance with this methodology without prejudice to other actions which may be taken under the Telecommunications Act 2004, as amended.

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Penalties	TSTT	By the same token that TATT is desirous of implementing penalties for the non compliance with this methodology it is unclear what penalty if any TATT will suffer in the event it does not promptly initiate the process for having another NPA allocated to Trinidad and Tobago should the current NPA be near exhaust. It is clear that failure by TATT to procure additional NPA/ CO codes accordingly can significantly impact a concessionaire's marketing strategy and growth giving other players an unfair advantage	TATT should either indicate the extent of damages recoverable by a concessionaire for failure by it to procure additional NPA/CP codes or confirm that this will be addressed under the common law principles.	This methodology is designed to ensure that the Authority does not end up in a situation where there are no numbers. The issuance of new NPA's is the prerogative of NANPA and the Authority must follow the procedures and provide justifications for same.
Section 5 - Methodology				
(a) Historical data required	TSTT	The methodology detailed as to how TATT expects to determine the expected exhaust		It is noted that data from 2004 may have been purged from

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from 2004 for both fixed and mobile	TSTT	date is noted. Furthermore TATT has determined that historical rates of assignment data are required from 2004. TSTT remains willing to work with TATT however it is respectfully submitted that given the period required i.e. 2004, this data may have already been purged and TSTT may be unable to provide same. Furthermore, TATT is the entity responsible for the issuance/allocation of CO codes and has routinely requested data from TSTT, if not all concessionaires, for the purpose of analysing the efficient usage of the numbers allocated to it. Indeed the requirement to pay fees based on the quantum of CO codes allocated to a concessionaire promotes the	We respectfully suggest that TATT review the data that was previously submitted by TSTT in this regard and arrange same accordingly.	your system. The Authority has, at past meetings, shown that submitted data had obvious errors which we were advised were as a result of implementation of new billing systems. The Authority is yet to receive corrected reports.

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	TSTT	efficient usage thereof. TSTT therefore needs to query why TATT now requires, at least of TSTT reformatted data. It is also submitted that given the basis of the methodology is the average rate of assignment /growth which is "*derived by using the historical rate of assignment of numbers over a <u>minimum</u> of six months.…*" And given that competition is relatively recent it is submitted that data for periods prior to the commencement of competition would not be relevant in the current market or may only serve to skew or inject errors into this analysis. As such TSTT must query the usefulness of this data prior to the onset	Historical data from 2006 to present would essentially provide TATT with data for a period at least four (4) times its stated minimum.	The reports provided have many gaps which required the use of forecasts provided by TSTT. This has led to skewing of the results as it was shown that the forecasts were in excess of actual usage in subsequent reports.

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	TSTT	of competition. Indeed given that we are nearing the end of 2007, data from all concessionaires should be available from 2006, giving TATT useful data for at least four(4) times this minimum period. In this regard it is noted that in this methodology at pgs. 15&16. TATT has also recognized that".. the recent introduction of competition in the mobile market and soon to be launched competition in the fixed line market, there are no established patterns in the market in either of the services at this time." Furthermore, as TSTT was the sole provider of telecommunications in Trinidad & Tobago prior to 2006, TSTT will be the	Starting point should be at least the advent of competition, March 2006. All concessionaires should be required to provide the same amount of data.	The March 2006 start date for Number utilization reports as recommended will be considered The recommendation of the start date for Number utilization reports to be March

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		only concessionaire that will have to provide data for two (2) years to 2004. In this regard, TSTT submits that such data gathered during a monopoly period would essentially skew any analysis to be conducted.		2006 will be considered.
	Digicel	With regards the following statement: "Upon implementation of the methodology, historical data on number assignments from 2004 for both fixed lines and mobile will be requested from the concessionaires on a quarterly basis up to the current year when the number assignments will be requested on a **monthly** basis." Digicel would like to disagree with the	Digicel would like to suggest that these current reports on number assignments should be supplied to the Authority on a quarterly basis and Not on a monthly basis.	The Authority expects that the reports issued by the administrative systems will require only a command for them to be printed. The analysis will be more accurate with 12 data points rather than four as suggested. Effective management of the numbering

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		frequency of current requests. In our view, requesting number assignments on a monthly basis is not feasible.		resources and determination of future trends requires as much data as possible. This monthly frequency may be reviewed at a later date.
(b) Forecast of number assignments on an annual basis for three(3) years	TSTT	Given the level of competition in the market i.e. six(6) concessionaires for fixed telecommunications services and three(3) concessionaires for mobile telecommunications services and the relative infancy of competition in Trinidad and Tobago, marketing strategies, developments and requirements may change significantly in much shorter periods. It is therefore anticipated that forecast data for three(3) years will essentially give TATT an inaccurate picture of the future	The value of forecast data in this industry diminishes after a period of twelve(12) months. It is recommended that a 12 month forecast be submitted as opposed to the 36 months suggested. This may increase as the market develops.	The 3 year forecast is to enable the Authority to make provision for projected requests for CO codes. As these forecasts are modified with the passage of time, the Authority will be able to make adequate provision for numbers to concessionaires at all times.

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		requirements.		
5.1 CO code Occupancy	Digicel	We would like to highlight the following statement: 'Occupancy thresholds for both the fixed line and mobile services have been established so that new CO codes can be assigned to the concessionaires **in a timely manner** so as not to put the concessionaires at a disadvantage by not having enough numbering resources to provide service to their customers?" Digicel takes note that the phrase " in a timely manner" gives no indication of a precise timeframe and puts no specific guidelines regarding the time period for the provision of these new CO codes.	Digicel believes that the Authority should be making more precise statements regarding the time period that is allowed for assignment of new CO codes. We believe that the Authority needs to state the timeframes as "within x months" or "y days from this date"	The Authority expects that issuance of growth CO codes to take no more than ten(10) working days after the submission of all relevant data and queries by the Authority answered satisfactorily.
5.5 PESTEL	TSTT	It is submitted that a PESTEL analysis is a	It is recommended that	The Authority will determine

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Analysis		highly subjective factor to be introduced into this methodology. Indeed given that this methodology requires significant amounts of data from the concessionaires the need for such an analysis is seriously questioned and if determined should nevertheless be included should only factor minimally on the determination made.	TATT provide greater detail as to its rationale for the inclusion of a PESTEL analysis.	market conditions by assess - ing market changes as well as the Authority's annual market report instead of the PESTEL analysis.
Section 6 – Application of Growth Rate				
6.2 The Authority's application of growth rate	TSTT	TSTT respectfully questions whether a regression analysis is indeed the best forecasting tool to gauge a CO code exhaust in the local environment. In this regard TSTT shall be grateful to understand the TATT's justification such a decision. It is submitted that this will inevitably provide a	TATT should indicate its rationale for the application of a regression analysis in assisting to gauge CO code exhaust.	Regression analysis is the normal tool used in forecasting trends. The Authority does not need to justify the type of regression that will be used for the determination as this will be determined by the data

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		skewed representation of the market as TSTT was the only concessionaire present in this market prior to 2006.		supplied
6.2 The Authority's application of growth rate	Digicel	Under Section 6.2 (a) fixed line and (b) mobile, the consultation document states " a regression analysis will be applied" with no statement about the form this regression will take i.e. whether Ordinary Least Squares (OLS), Maximum Likelihood (MLE) or Bayesian regression will be applied. Are there any other assumptions that need to be made clear?	Digicel recommends that the Authority should indicate what type of regression is being used for the application of growth rate.	Until data is supplied, the type of regression that will be used cannot be determined. The best fit will be used and the projection is done based on this.
Section 7 – Determination of CO Code Exhaust				
Provision of marketing plans and	TSTT	Although TSTT recognizes TATT's commitment to confidentiality, this requirement to submit marketing data	Marketing plans and schedules are not necessary.	Details of marketing plans are not required. The information needed consists of the

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schedules for the stipulated periods		should be carefully considered. It is uncertain whether the provision of this data is necessary or helpful. Even if this data is supplied. As a concessionaire approaches its number utilization threshold that concessionaire will invariably seek to promptly apply for additional CO codes/growth codes. As such, given the forecast data to be provided, the supply of such marketing plans and schedules may be of limited assistance.		approximate dates and duration of marketing thrusts to support requests for growth CO codes as well as to support sudden changes in utilization of numbers.
	Digicel	The Authority would also "request forecast information on the demand for numbers for the next 3 year period and construct a profile of number usage by concessionaire and service category."	Digicel suggests that the Authority should include the option for this 3 year forecast to be modified if necessary.	Adjustments will be made as the situation dictates in the future.

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7.1.1 Assignment rate trend	Digicel	We make reference to the section that states" the data for the twelve month period prior to the current date is requested on a monthly basis as this will give the Authority a better understanding of the demand for numbers and the trend of the assignment rate" Digicel notes that no specific format has been suggested for provision of this data. We would like to know what format is required.		This data is to be supplied on the forms COCUR 01- Fixed Historical data Appendix 2 and COCUR 02 Mobile Historical data Appendix 4
7.2.Using the different templates : Paragraph 2	TSTT	It is indicated that one of the reasons that the different templates are being proposed is in order to determine whether the forecast data supplied is **"reasonable".** TSTT would therefore appreciate a	In the premises it is submitted that TATT should in addition to supplying its basis for saying also detail the	Reasonableness is guided by the following: Requests for numbers in excess of recent historical assignment rate without good

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		clarification of the criteria to determine "reasonableness"	relevant criteria for its determination.	justification would be considered unreasonable
7.2.Using the different template: Paragraph 4 Forms can be devised for **"other services"** using Number resources	TSTT	Reference is made to the possibility of forms being devised " for other services using Number resources". It is unclear what these "other services" may be.	TSTT suggests that TATT should be specifically detail what the reference to "other services" addresses.	The Authority needs to make provision for future technologies which may be introduced in the local market by concessionaires and which may require the use of numbers.
7.2.1.2 Forecast Fixed line Worksheet COCUR 01-01	TSTT	There appears to be an apparent inconsistency in the timelines for submission of reports to TATT. It is noted that at Section 3 above these reports were required on a semi annual basis rather than	Further clarification on the timelines would be appreciated.	The basis of the data on COCUR 01-01 is on a quarterly basis. This is not the frequency of the report but the data was requested to be

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		quarterly.		reported on a quarterly basis.. Note that the data requirement for this report has been changed.
7.2.2 Form COCUR 05	TSTT	Reference is made to the determination of whether a CO code is in "jeopardy of exhaust", however the criteria for such determination has not been detailed. TATT would therefore be able to determine in its absolute discretion as when a CO code is in jeopardy.	In order to ensure equality of treatment it is suggested that TATT provide details of the criteria it proposes to use to determine what occupancy level determines/signals 'jeopardy' and further what measures are to be employed thereafter.	The criteria used to determine jeopardy is three (3) years number supply based on the current assignment rate. Should jeopardy conditions exist, number conservation measures will be instituted. However, every means of having numbers utilised efficiently will be encouraged by the Authority.
7.5.1 CO code Exhaustion	Digicel	The consultation document states "the information also provides the Authority	Digicel suggests that the Authority should amend	Action to mitigate the exhaust of CO codes will commence

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Determination		with the exhaust potential of CO codes for fixed lines and mobile numbers independently as assignment rate and the reasonableness of the forecast usage for each sector can be judged. Actions to mitigate the lack of numbers due to exhaust of CO codes can be initiated in a timely manner." Digicel believes that there is too much ambiguity in the statement "in a timely manner" It should be noted that to circulate a new number range it takes 60 working days before the number range can be used.	the statement to indicate within what timeframe this action will be taken. To leave the time frame open to discretion is to create problems for concessionaires especially when this timeframe is too long.	within five(5) working days once potential exhaust is determined. The Authority will issue new CO codes ten(10) working days after submission of all relevant details by concessionaires and the satisfactory responses to all queries by the Authority
7.6 Implement measures to promote	TSTT	It is recognized that in order to ensure (rather than promote) the efficient utilization of numbers, TATT must be	Detail of possible measures to promote the efficient utilization of numbers	Any measures to ensure efficient use of numbers will be dealt with in the National

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efficient use of numbers		empowered to implement appropriate measures to facilitate same. However, it is respectfully submitted that the nature of these measures should be carefully determined, made known to the industry and an opportunity for them to be consulted upon afforded, in order that all stakeholders can appreciate same.	should be provided.	Numbering Plan which will be consulted upon.
Section 8 – Number Conservation				
8.1 Number Conservation methods employed (7) Number pooling introduced	TSTT	TSTT is unable to comment on this issue given that all the assumptions of the "number pooling concept" are not known	Could TATT kindly provide a more detailed explanation of the "number pooling concept"	Details will be made available in National Numbering Plan document.
8.1 Number conservation methods	TSTT	It is noted that the concept of number portability is essentially not a conservation		In the Authority's opinion, Number Portability is a

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employed (9) Introduce number portability		tool. Rather it is submitted it is more a consumer tool and only serves to reduce the quantum of aging numbers. Nevertheless, TSTT looks forward to the planned consultation on Number Portability in due course.		conservation tool.
8.5 Incentives to use numbers /CO codes efficiently	TSTT	Apart from the incentives currently in place as detailed in Section 8.5, it is submitted that TATT should detail any additional measures it proposes to introduce. Indeed reference is made in Section 8.5 to the adherence to number utilization criteria and in this regard greater details of these measures, penalties, timeframes and basis of justification for growth should be provided.		Noted. However this is not the subject of this document and any incentives to promote the use of numbers efficiently will be presented in the National Numbering Plan..
8.5 Incentives for efficient use of	Digicel	With regards the following statement: "1. Charging a number fee for numbers		Noted.

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Numbers		issued to the concessionaires whether they have been assigned or not will provide inducement for them to use them efficiently. It should be noted that many European countries also charge for numbers as an incentive for improved efficiency in number utilization" Digicel submits that the Authority already charges a fee which is high in comparison to other countries. "2. Withholding of additional numbers should be non compliance by concessionaires in respect of efficient utilization of numbers"	Digicel suggests that the Authority needs to notify operators in advance, if the decision to withhold number is taken. The timeframe should be at least **one month** before any such action is taken.	Noted
8.6 Reclamation of Codes not	TSTT	The criteria for classifying codes as unused should be detailed and indeed the term	TATT should detail the criteria to be used to	Unused codes are codes from which number assignments

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in use		"unused" should perhaps also be defined . Nevertheless given that in keeping with the incentives for efficient use of numbers, a concessionaire is charged a fee for numbers assigned whether or not used, TATT needs to address the issue of compensation	reclaim "unused codes" and the compensation payable therefore.	have not been made for a period of (six) months. Compensation will not be paid to a concessionaire who fails to use a CO code within this time frame.
	Digicel	Digicel would like to know what timeframe is being established for reclamation of numbers/CO codes not in use	Digicel is of the view that operators should have he chance to respond before the Authority can reclaim numbers/CO codes especially since there is a distinct possibility that SIMS can be ordered in advance.	CO codes that have not been assigned to customers within six (6) months of issue, will be reclaimed by the Authority. This does not give concessionaires the opportunity to assign numbers from each CO code issued to them just to retain their CO codes. Concessionaires will be given the opportunity to

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				explain why the CO code has not been put into service.
Section 8.6 Reclamation of codes not in use	Digicel	"The Authority will move speedily to recover unused codes so that they may be reissued in a agreed to timeframe." Digicel would like clarification on the method by which codes will be reclaimed.	It is recommended that before any action is taken to reclaim codes, there should be a discussion with the operator(s) concerned about the procedure for reclamation.	The concessionaire will be notified of intended reclamation and given an opportunity to explain why CO codes remain unused after six months.
Section 8.8 Reduction in Block Size	Digicel	".. the telephone numbers will be issued in blocks of one thousand rather than ten thousand as is the normal practice" Digicel states that it is clearly opposed to this suggestion about reduction in block size.		Noted.. The Authority reserves the right to use whatever method to conserve numbers in the 868 NPA