CYPRUS TELECOMMUNICATIONS AUTHORITY (CYTA)

STRICTLY CONFIDENTIAL

B3. CCA Valuation and CVR Production Document

FOR THE

«LRIC AND ACCOUNTING SEPARATION»

CONTENTS

I. CVR Production

For each defined cost group, a relationship is constructed to represent the extent to which costs are removed or added by the exclusion or inclusion of one of the defined increments. This relationship is known as a cost volume relationship (CVR).

CVRs are developed for functional groups of cost, assets and liabilities which share a common cost driver. Cost drivers can be either exogenous, such as traffic minutes, or number of lines, or endogenous, such as the Net Replacement Cost of switches or total operating expenditure.

1. DEPENDENCIES

In order to capture the different drivers, it is necessary to define 'hierarchies' of relationships within the model. This allows for those costs, which are driven by data external to the model to be allocated first, with successive interdependencies being 'rippled' through the model. The dependency hierarchy must be defined in such a way as to ensure there is no circularity in the dependencies.

Once the costs dependent on exogenous drivers are determined in the model, other costs dependent on those costs can be determined. Costs that are driven externally are affected by cost volume relationships (CVRs), while those that are driven internally are affected by cost-cost relationships (CCRs).

2. CVR SPECIFICATION

Key in calculating long run incremental costs is the identification of cost volume relationships; namely, defining costs as functions of their identified cost drivers. The two key characteristics of cost volume relationships are:

1. the shape of the curve, reflecting the relationship between variable costs and volumes; and
2. the extent of fixed common and joint costs exhibited in the relationship.

Of these characteristics, the most important parameter is the definition of the minimum point – this defines the boundary between fixed and variable costs.

There are three main methods for calculating Cost Volume Relationships:

- ***engineering simulation models:*** engineering modelling attempts to model an asset's costs on the basis of underlying unit costs of component parts. The steps in the process are as follows:

    1. break down the asset into its component parts. For example, primary exchange costs could be broken down into (1) processor-related cost and (2) line-sensitive costs such as line cards;
    2. obtain a unit cost for each of the elements;
    3. populate the model with data reflecting all relevant assets in the network;
    4. apply the relevant unit costs to each asset, in order to capture any difference in the mix of component parts; and
    5. flex the identified cost driver to derive a cost volume relationship.

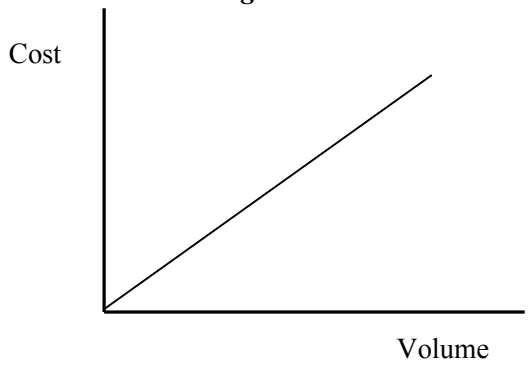
- ***interviews and field research:*** interviews with managers of particular departments were used to identify the likely behaviour of costs in relation to changes in the driver volume –
- ***statistical surveys:*** surveys may be used when data to derive a cost volume relationship is not available within the organisation. As a consequence, it may be possible to derive a CVR based upon regression analysis, which models the relationship between costs and identified volume drivers for other operators. This would provide a sample with differing absolute cost and volume levels, and hence allow a functional relationship to be defined on the basis of external data.

The choice of the technique will depend on the functional nature and the materiality of the particular cost item, its specific cost characteristics and availability of data.

Cost volume relationships can take many forms a selection of which are presented graphically below:

The simplest form of CVR is a straight line emanating from the origin, meaning that there are no fixed costs. Figure 1 shows such a relationship.

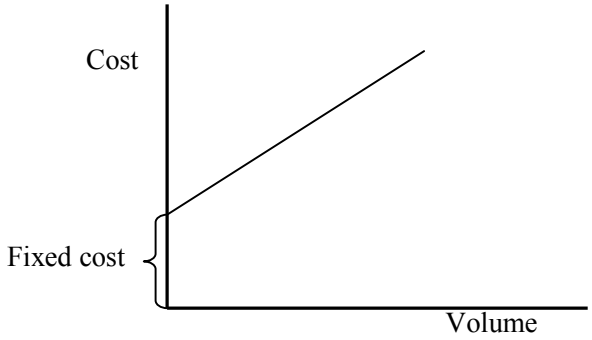
Figure 1 - SLTO



The cost groups 'Access – Local Loop Equipment' and 'Bad and Doubtful Debts' are two examples of the above relationship. In these cases, the costs are regarded as fully incremental and proportional to the driver; there are no fixed costs. When determining the CVR, it is necessary to consider whether there are fixed costs and also whether the unit cost will decline, increase or stay constant as the volume of the cost driver increases.

Figure 2 shows a CVR where there are fixed costs; where these costs relate to more than one increment then these are fixed common costs. There is a special case where the fixed costs relate to only a single increment – in this case they are referred to as Increment Specific Fixed Costs. When the costing system is assembled, then such costs will be identified and added to the incremental cost calculation.

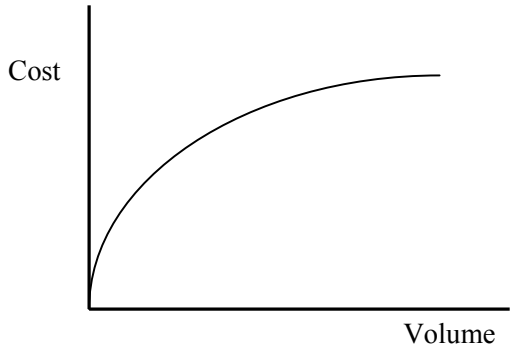
Figure 2 - SLWI



Examples of such a relationship are the cost groups 'Ducts & Manholes' and 'Fibre – Core'. In this case there are fixed costs which cannot be reduced even at the minimum network possible.

The following figure (Figure 3 – Curve Through the Origin) shows per unit costs declining as volume increases. This is an example of economies of scale.

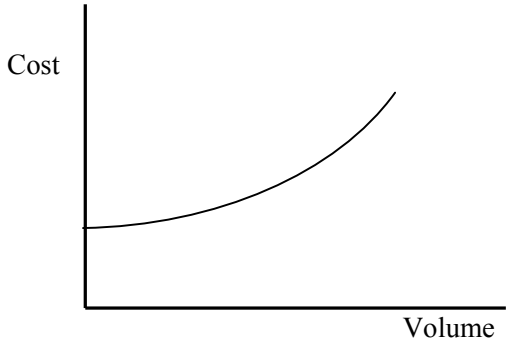
Figure 3 - CTO



The only example of such a relationship is the cost group 'Human Resources – Personnel salaries'. In this case it was identified that, while for zero volume the HR department costs are effectively zero (no such department is needed), at low volume levels, the HR costs quickly increase. After that, for higher volumes, they increase at a slower rate.

Figure 4 shows marginal cost increasing as volume increases. Additionally, there are some fixed costs and therefore the curve intercepts the y-axis.

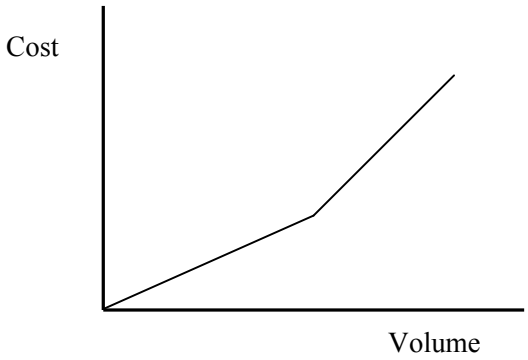
Figure 4 - CWI



The cost group 'RSU/Local Traffic' is represented by such a relationship. While such a relationship may be counter-intuitive (it shows diseconomies of scale), in practice such relationships do exist. In this case, it is caused by the switch matrix costs which become disproportionately more expensive for the larger sizes of switch.

Another possibility is that the CVR will display kinks (figure 5); for example, at a given level of output a major investment might need to be made in order in order to meet volume requirements or at low levels of output it may be appropriate to sub-contract and at higher levels of output to self provide.

Figure 5



The local composite CVR of the cost group 'RSU/Local Traffic' is an example of the above relationship.

The abbreviations of different types of CVRs are explained below:

SLTO	Straight line through origin
SLWI	Straight line with intercept
CTO	Curve through the origin
CWI	Curve with intercept

It is worth noting some of the key overall assumptions that are used in deriving the CVR curves:

Scorched Node – at the minimum network point, CYTA is assumed to retain its existing geographic coverage in terms of customer access and connectivity between customers, and provides the infrastructure to do this from existing network nodes. The type of equipment at each node may, however, be varied

Thinning – existing transmission routes are assumed to be necessary to provide connectivity between network nodes even at the minimum point – only the amount and type of equipment housed on each route may be varied.

Service Quality – existing service quality levels are assumed to be maintained at all levels of output.

Constant Mix – the mix of demand characteristics, which impact on driver volumes, is assumed to be constant irrespective of scale. For example, average call duration is assumed to stay constant regardless of the number of calls made.

Increment Independence – Changes in the level of activity in the main increments (eg, access, core, mobile) are assumed to be independent of one another.

The CVRs/ CCRs constructed are presented in the import files.