



The Development of Long Run Incremental Cost Estimates in the Postal Sector by Royal Mail

A discussion document

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GLOSSARY

	Description
CVR	Cost Volume Relationship
DLRIC	Distributed long run marginal costs
DSAC	Distributed stand alone costs
EEO	Equally efficient operator
EPMU	Equi-proportional mark up
FAC	Fully Allocated Costs
LRAIC	Long run average incremental costs
LRIC	Long run incremental costs
LRIC+	Long run incremental costs plus common costs allocation
LRMC	Long run marginal costs
POL	Post Office Limited
REO	Reasonably efficient operator
SAC	Stand alone costs

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1. Executive Summary

Following support for long run incremental cost (LRIC) estimation in the postal sector from the independent review of the postal sector "*Modernise or Decline: policies to maintain the universal service in the UK*" (2008) and some discussion by the postal regulator (Postcomm's May and November 2010 consultation documents) and Royal Mail's own internal review, Royal Mail publishes this initial discussion document to inform and invite comment on the development of LRIC estimates. Royal Mail does not currently have LRIC estimates per se, but believes that they could provide important information for the business and regulator in the future.

In preparing this document, we have held discussions with Postcomm and received input from consultants Oxera and KPMG. Our discussions with Postcomm have confirmed that there is a common view that LRIC has the potential to be an important part of a new regulatory framework from 2012. For example, it has the potential to provide some further perspective on efficient costs and the costs that prices should recover in the long run. It also has the potential to provide information that facilitates proportionate ex ante regulation and where appropriate the application of only ex post regulation.

For the avoidance of doubt, it is not the purpose of this document to speculate on what a new regulatory framework from 2012 could or should look like. Postcomm has indicated that LRIC might be the subject of a Postcomm consultation document in Spring 2011 and that LRIC estimates might be relevant to that framework.

The purpose of this document is to explain how the LRIC estimation is being taken forward by Royal Mail, for the existing regulatory framework and in preparation for the future framework. It is an introduction to LRIC to increase awareness of this subject and is ahead of further details of the LRIC estimation methodology that are necessary for its development and we expect to put forward in 2011.

In this context we note that two approaches to form LRIC models have been developed within the telecommunications sector. Top Down models start from the incumbent's network and cost profile while Bottom Up models start from an engineering perspective of an efficient network and its activities. In the telecommunications sector, these Top Down models have typically been developed by the incumbent operators and Bottom Up models by regulatory authorities alongside the incumbent and other parties. In the postal sector, Royal Mail is looking to take forward the development of both models in close consultation with Postcomm, but in this discussion document our focus is on the development of a Top Down LRIC model.

Given the backdrop of the changes proposed by the Draft Postal Services Bill, and with the prospect of a new regulatory framework for 2012, Royal Mail is taking forward LRIC model development and estimation. In this discussion document we outline our approach to develop a Top Down LRIC model.

The structure of the document is as follows:

Section 2 provides some background to LRIC estimation.

Section 3 discusses what is involved in a Top Down LRIC model.

Section 4 discusses some issues specific to the development of such a model in the postal sector.

Section 5 concludes and invites comment on these three areas of interest.

If there is sufficient interest we will arrange a workshop to discuss the subject. Please express your interest to Paul Dudley at Royal Mail Group Headquarters, 3rd Floor 100 Victoria Embankment or e-mail paul.dudley@royalmail.com.

2. Background to LRIC

2.1 Introduction

LRIC has been used as an estimate for marginal costs in network industries which typically have large proportions of fixed capital costs. It is often considered to be the most appropriate benchmark from an economic perspective for assessing the prices offered by firms who are dominant in a market (and potentially profiting from price increases or decreases in that market). A profit maximising firm would not be expected to price a service below LRIC in the long run. It would be expected to set prices to recover its LRIC costs.

In this section we provide further background on LRIC.

2.2 What is LRIC ?

LRIC takes a long-run, forward looking view of costs, in which all costs are treated as being variable. The reference to “long run” means that the operator is assumed to undertake capital investment or divestment to increase or decrease the capacity of its existing productive assets, using existing technology. Hence all current costs could vary, including investment capital and all costs related to network capacity, subject to a test of them being efficient.

The long run ‘should cost’ implies that LRIC estimation is forward-looking in terms of its costs. It aims to mimic the workings of a competitive market and implies that historically incurred costs may not necessarily be an appropriate cost benchmark for future prices.

LRIC is then the cost that can be avoided by stopping or cost that is incurred in increasing the production of a specified increment (product, service or network element) given that all other products, services or network elements are still being provided at their original level. It captures all types of cost that can be avoided in the long run including annual operating cost and an attribution of capital costs.

When the LRIC cost is divided by the relevant increment in demand or volume it can be referred to as the long run average incremental cost (LRAIC), though this is often shortened to LRIC.

2.3 What is it used for ?

LRIC modelling has been used in defining price floors and ceilings in order to monitor compliance with cost orientation obligations in regulatory environments. Comparison of product revenues and LRIC estimates provide information about sustainable, long term product profitability and potential cross subsidies. When a firm makes a profit in one group of products and loss in another group of products, it is not considered to be sufficient to assume the existence of a cross subsidy within economics literature. Rather, the economics literature identifies the

potential for a cross subsidy when the revenues for one group of products do not recover LRIC (and for another group of products they do) or when the revenues for one group of products exceed stand alone costs¹. This cross subsidy could then have adverse effects on customers and competitors when the relevant firm is dominant in a market.

Competition authorities have used LRIC as the basis for assessing the pricing behaviour of firms that have market dominance when a complaint has been filed against such a firm. Competition law prohibits firms with market dominance from abusing that dominance to foreclose the market to competitors. Competition authorities might look at whether a dominant firm is pricing below LRIC for its end to end services when assessing whether that firm may be pricing in a predatory manner to prevent new entry or eliminate competition in a relevant market to the ultimate detriment of consumers. They might also look at whether a dominant firm offering access to its downstream network is pricing the margin between end to end and access below LRIC in such a way as to keep upstream competitors out of the market (ie. margin squeeze).

Examples of competition cases where the LRIC cost concept has been used to examine the scope for exclusionary conduct include Deutsche Post AG (Case COMP/35.141), Deutsche Telekom (Case COMP/C-1/37.451, 37.578, 37.579) and Telefónica (Case COMP/38.784). In the light of Condition 11(3) of Royal Mail's Licence, Postcomm endorsed the use of LRIC and used a proxy for LRIC based on a mark up of long run marginal cost (LRMC) in its investigation into the pricing of Mailsort Light (2010).²

In addition, regulators have used some LRIC based estimates to inform the setting of prices for some regulated activities. Examples from the telecommunications sector include the prices for access to the 'last mile' network of fixed telecoms incumbents and the interconnection charges that operators pay to each other in order to 'terminate' calls on their networks.

As an example of their potential use in the postal sector, if LRIC estimates had been available, it may have been open for Postcomm to take direct account of LRIC estimates rather than proportions of fully allocated costs (FAC), when setting the level of upstream headroom for the changes introduced for 2011.

¹ Faulhaber (1975) "Cross Subsidization: Pricing in Public Enterprises" in *American Economic Review* pg966-77 and (2005) ; "Cross subsidization analysis with more than two services" in *Journal of Competition Law and Economics* pg441-448. These show that these two tests for cross subsidy are equivalent when applied to a firm that is being regulated to breakeven (ie. revenues just covering economic costs).

² 'An investigation into Royal Mail's offering of Mailsort Light: a "minded to" decision document by the Postal Services Commission', Postcomm, June 2009, paragraph 4.22; available at: http://www.psc.gov.uk/postcomm/live/news-and-events/news-releases/2009/postcomm-publishes-minded-to-decision-on-mailsort-light-investigation/2009_06_24_MSL_Minded_to_Non_Confidential__vFINAL.pdf.

2.4 Who has advocated LRIC estimates for the postal sector ?

The independent review of the postal sector “*Modernise or Decline: policies to maintain the universal service in the UK*” (2008) heralded the need for change to the way in which the postal sector is regulated. In its May and November 2010 documents, Postcomm has set out proposals for some changes to the regulatory framework. For 2011, Royal Mail has developed a draft Costing Manual to make the methodology of the current costing system more transparent, and will also look at forms of accounting separation. These were raised within the independent review as steps to improve information and understanding with a view to more proportionate and better targeted regulation.

The independent review raised the need for the development of LRIC estimates as a further enhancement of information. It stated: “*We recommend that Ofcom [under the Draft Bill at the time and currently Postcomm] should address cost transparency as a priority and build its own model of costs in consultation with Royal Mail. The model should include the ability to measure the long run incremental costs of products (LRIC)*” (para 183).

In its May 2010 consultation document, Postcomm identified LRIC as one of the five work-streams making up the Cost Transparency project. Postcomm stated: “*The development of appropriate safeguards requires an understanding of the relevant LRIC of Royal Mail’s products.... Postcomm will seek to work with Royal Mail to develop the capability to derive LRICs at product level*” (Annex 3, para 2.12, Postcomm’s May 2010 consultation document). This was confirmed in its November 2010 document.

2.5 Why doesn’t the postal sector have LRIC estimates ?

Royal Mail’s current costing system forms Fully Allocated Costs (FACs) for activities which are then allocated to services. These costs include direct, joint and common costs. In addition, Royal Mail’s costing system applies factors to these costs to form estimates of Long Run Marginal Costs (LRMCs). These factors are considered to represent the long run marginal cost of 10-30% reductions in volume across all services. Consequently, Royal Mail has estimates of LRMCs but does not currently have estimate of LRICs formed in the manner set out in this document.

LRIC differs from the FAC in Royal Mail’s costing system in that LRIC focuses on the change in cost from a reduction or increase in mail volume and does so by looking at efficient network costs and modern equivalent capital costs. In principle, as FAC involves allocating all the common costs across the products or services, the LRIC of an individual service would typically be expected to be lower than the current levels of FAC, in this regard.

2.6 How are LRIC estimates formed ?

2.6.1 Top Down and Bottom Up models

Typically two general approaches of models are developed to estimate LRIC:

- (a) **Top Down models**, take existing accounting information as the primary data source and calculate the costs of relevant increments or decrements (for products, services or network elements) by applying cost-volume relationships linking these increments/decrements with pre-defined cost categories from the accounts;
- (b) **Bottom Up models**, adopt an economic-engineering approach, starting from the demand for the product, service or network element defined as the increment and then building an efficient network that can address this demand.

It is then possible to identify several types of model from these two broad approaches, through changes to some of their key assumptions.

2.6.2 Nodal assumptions

The postal network can be characterised as having flows of mail from the point of despatch, through nodes where sorting activity occurs to point of delivery. More specifically, collection typically takes mail to the local Delivery Office or Mail Centre for outward sortation and transit to the Mail Centre local to the point of delivery for inward sortation. The mail is then transported to the local delivery office for final delivery. Pre-sort mail can enter the network through Regional Distribution Centres or the Inward Mail Centre.

A key dimension along which both types of model can vary is whether to take, as a starting point, the existing network topology—i.e, the number and location of Mail Centres Regional Distribution Centres and Delivery Offices — or whether to model a fully efficient ideal network topology from scratch. There are three main options:

- (a) A **Scorched Node** approach assumes that the number and location of the nodes and their activities remain as currently defined within the network. These assumptions or constraints are implicitly made in Top Down models that use historic cost accounting information.
- (b) A **Scorched Earth** approach assumes that there is freedom to relocate and re-optimize nodes and their activities. These assumptions are more readily introduced in a Bottom Up model (but Scorched Earth is not necessarily a feature of all Bottom Up Models).
- (c) A **Modified Scorched Node** approach assumes that the location of the nodes is as in the current network (as with Scorched Node) but that the activities at the nodes can be re-optimised. These assumptions or constraints can be developed within both a Top Down model that takes forecasts of future

accounts as an input and a Bottom Up model that constrains the locations of the nodes available towards those already present in the network, and could therefore lead to LRIC estimates from the two model approaches converging to some degree.

The question of which approach to use forms part of a more general point relating to the treatment of (in)efficiency in the network configuration. In the telecommunications sector, best-practice Top Down LRIC models have typically involved the application of a Modified Scorched Node approach, which takes the existing network topology as a starting point and aims to eliminate other inefficiencies.

In the postal sector, a Modified Scorched Node approach could involve taking the existing number and location of Mail Centres and Delivery Offices as given and correcting for the presence of inefficiencies—for example, by changing the number and type of sorting machines to improve productivity, modifying processes within the pipeline, and reducing labour costs and the costs of other inputs. A Modified Scorched Node approach could also entail taking the existing location of nodes and allowing for changes in activities undertaken in (and potentially closure of) Mail Centres and Delivery Offices (with the associated changes to vehicles and other inputs).

2.6.3 Other assumptions

Within some LRIC models, and particularly those assuming a Modified Scorched Node or Scorched Earth approach, assumptions can be modified to assess their impact on the LRIC estimates. This is less the case with the Top Down, Scorched Node model where assumptions are based on the existing network and its historic accounting costs.

For example, economies of scale and scope play a major role within the postal network because of the presence of costs which do not vary with volume. The average cost of delivery and collection reduces when mail volumes increase, and rises when mail volumes decrease. Consequently, all other things being equal, an entrant with smaller volumes than Royal Mail and comparable marginal costs, would be expected to incur higher average costs for these activities. Modified Scorched Node or Scorched Earth approaches can assess the effect of volume on the average costs by looking at the LRIC estimates by applying the scale of the incumbent or hypothetical entrant.

This example might be extended to other assumptions where the entrant and incumbent are known to differ and corresponding entrant and incumbent LRIC estimates can be estimated. For example, the national pay agreements of the incumbent as Universal Service Provider might need to differ from those of an entrant. Also the service specification of the incumbent as Universal Service Provider might differ from that of the entrant.

2.7 What measure of cost are related to LRIC ?

There are several measures of cost that are related to LRIC and LRIC models including LRIC, LRIC+ DLRIC, DSAC and SAC.³ These options are described in more detail below.

2.7.1 LRIC

As we have discussed LRIC defines the incremental (or decremental) costs that are associated with a increment (or decrement) of demand or volume of an activity, product or service, where those costs are network costs of activities and processes within the network. While the level of disaggregation can affect the allocation of costs and LRIC estimates, the procedure of allocating costs incurred within processes and activities to the volume changes relevant for the estimation of LRIC, reduces the scope to collect residual costs and treat them as common costs. This has the effect of stabilising the LRIC estimates.

2.7.2 LRIC plus (LRIC+)

There are common costs which could still be efficiently incurred costs, but are not directly attributable to an activity. Common costs are necessarily allocated under a different allocation rule to those directly incurred through the operational process. When common costs are added to the estimates of LRIC it forms a LRIC+ estimate.

Typical mark-up rules use Ramsey pricing methods (recovering a greater proportion of common costs through the most inelastic products), or an equi-proportional mark-up approach (EPMU), where the allocation is based on the incremental costs of different products and services. Currently Royal Mail's FAC product costing system applies an EPMU rule for common costs as proposed in the Third Postal Services Directive of the European Union.

2.7.3 Stand alone costs (SAC)

The stand alone cost (SAC) is the cost incurred by a firm in the provision of that incremental demand or volume independent of it having any other demand. Hence, the SAC of a service is the cost of providing that service on its own, including all common costs associated with that service. It therefore attributes all of the common cost to the increment. As such, SAC has been used as an indication of the maximum cost and therefore price that could reasonably be applied because a price that exceed it would not be efficient.

2.7.3 Distributed-LRIC (DLRIC) and Distributed-SAC (DSAC)

Increments could be defined in various ways, for example to represent network elements, activities and/or pipeline functions. Furthermore, increments could be

³ See for example, Ofcom (2009) "Draft Determination to resolve disputes between each of Cable & Wireless, THUS, Global Crossing, Verizon, Virgin Media, and COLT and BT regarding BT's charges for partial private circuits", Draft Determinations and Explanatory Statement, April 27th.

organised into a hierarchy as a means of apportioning some common costs at a higher level of aggregation to the increment in question. Examples of this are referred to as distributed long run incremental costs (DLRIC) and distributed stand alone costs (DSAC).

As an illustration, such hierarchy might comprise:

- (a) *Level 1: the whole business.* This would consider the whole of Royal Mail as a single increment, with the incremental cost equal to the total cost of the business.
- (b) *Level 2: network activities and processes.* This might comprise of collections, processing, transportation, delivery.
- (c) *Level 3: network sub-activities and sub-processes.* This might comprise of collections from Post Office counters, collections from large mailers, collection from post boxes.

In this illustration, the DLRIC for an increment at Level 2 allocates some of the common costs associated with Level 2 to the LRIC estimate, while the DSAC for an increment at Level 2 allocates some of the common cost associated with Levels 1 and 2 to the LRIC estimate.

In general, the values increase from LRIC, to LRIC+, to DSAC to SAC. In addition these values tend to converge towards each other the greater is the level of aggregation and shared common cost. LRIC and SAC are economic concepts relating to efficient operator costs and prices. In contrast, the other measures apply accounting rules for allocating common costs.

2.8 Summary

We have identified seven main combinations of models to develop LRIC estimates, which we will refer to as model types. These are summarised in Table 1.

Table 1: Types of LRIC models

Type	Model	Core assumption	Other assumptions
1	Top Down	Scorched Node	Incumbent
2	Top Down	Modified Scorched Node	Incumbent
3	Top Down	Modified Scorched Node	Entrant
4	Bottom Up	Modified Scorched Node	Incumbent
5	Bottom Up	Modified Scorched Node	Entrant
6	Bottom Up	Scorched Earth	Incumbent
7	Bottom Up	Scorched Earth	Entrant

A key strength of the Top Down model approach is that it uses Royal Mail's costs and network and incorporates its economies of scale and scope, some of which arise by virtue of its specific licence obligations as the designated Universal Service Provider in the UK. In contrast, a weakness is that it does not necessarily assume

an optimisation of the network or the economies of scale of an entrant. This can lead to the development of models with modified network assumptions or entrant scale, and ultimately a scorched earth and entrant model to inform LRIC estimates related to the prevailing business model in the market.

In the telecommunications sector, the Top Down model is often associated with identifying the LRIC of an 'equally efficient operator' (EEO) – that is, the costs of entrants are assumed to be comparable to the LRIC derived from incumbent costs. The Bottom Up model is often associated with identifying the LRIC of a 'reasonably efficient operator' (REO) – that is, the costs of entrants are assumed to be comparable to the LRIC of a reasonably efficient, hypothetical entrant. However, it is also possible for some assumptions in the Top Down model to be amended to better reflect those of entrants, and some assumptions in the Bottom Up model to better reflect those of the incumbent – thereby allowing comparison of a range of results. This is reflected in the different seven types shown in Table 1.

In addition to these types of estimate we have also noted that there are other measures often associated with LRIC and LRIC models, which apply combinations of LRIC estimates and treatments of common costs.

3. Top Down LRIC Modelling

3.1 Introduction

This section discusses the key methodological issues involved in the development of Top Down LRIC models in the postal services sector.

We believe that the development of the LRIC estimates should adhere as closely as possible to four principles:

- (a) Consistency:* LRIC estimates require consideration of efficient operating and capital costs. For example, a process that is best practice and efficient (e.g. walk-sequencing⁴), but not yet fully implemented nor represented in the historic costs, should be taken into account in forming the LRIC estimate, and within the LRIC estimation be applied as if nationwide (where appropriate) and with recognition of its impact on other parts of the pipeline.
- (b) Practicability:* The level of disaggregation used within the LRIC estimation should address the needs in terms of a reasonable expectation of the level of detail that might occur in an investigation or other regulatory intervention, while also remaining manageable for the purposes of modelling development and use, and transparent to those reviewing it.
- (c) Future-proof:* The future changes to the products, service mix and/or network configuration should not render the model obsolete, even if the assumptions used for the model are periodically updated to reflect such changes.
- (d) Interdependencies:* If one regulatory review process and decision affects inputs to the LRIC model, that interdependency could need to be reviewed. For example, if Type 2 or 3 LRIC estimates are formed from inputs from Royal Mail's plan, then they might also need to change with business development and regulatory review of that plan (for example, as part of the price control review) or changes to the costing methodology applied to the costing system (for example, as part of the review of the draft Costing Manual).

3.2 Element costs

System costs – such as pay, vehicles and machines – are defined for an element on which the LRIC estimate is based. The element of cost is then identified by process or activity – such as collection, outwards sortation, network distribution, inward sortation, local distribution, delivery – and by mail characteristic – such as format (Letter, Large Letter, Packet), class (1C, 2C, 3C) and machineability (manual, automated). The element may need to reflect the relevant level of disaggregation of market definition that could reasonably be expected for a regulatory investigation or other regulatory intervention, in the absence of prior knowledge as to what any investigation or intervention might involve. In terms of model

⁴ The sequencing of mail by machine to walk at the inward mail centre.

development, this tends to suggest the need for it to cope with a level of disaggregation beyond that of broad aggregate markets.

Taking the process of collections as an example, this might be subdivided into three sub-processes: letter box collection, Post Office Limited (POL) collection, and direct customer collection. However, these sub-processes might not exist as discrete activities within the costing system of the operator. They might need to be formed from information in the costing system as hypothetical sub-processes which reconcile to the costs within the costing system.

In addition, these system costs might be historic for a Type 1 LRIC, or adjusted for Types 2 or 3 LRIC. For example, the adjusted Type 2 LRIC might be formed from the incumbent's business plan in a future year, while the adjusted Type 3 might be formed from the incumbent's business plan in a future year with modified hypothetical entrant assumptions.

We propose to use the same model structure for each Type 1 to 3, albeit with different inputs and assumptions. In the case of Type 1, LRIC will be reconciled back to the FAC costing system which uses historic audited accounting costs for regulatory reporting purposes.

3.3 Cost volume relationships

The calculation of LRIC requires understanding how costs vary according to the volume of services produced. Therefore a cost volume relationship (CVR) might be needed for each element or cost category. The CVR expresses how the cost for that element changes with volume. For a Top Down model and allocated system costs, the CVR for the element identifies the costs avoided from a reduction in volume. This forms the basis of estimating the cost in the long run of a decrement or increment of volume (taking account of capital and operating costs).

The CVRs are formed taking account of multiples applied to the volumes relating to routing matrices and weighting factors which pick up the 'intensity' of network use. The routing matrices map the activities incurred by the mail volume of the relevant element with, for example, some mail volume going through some activities more than once and incurring twice the cost of a single run through those activities. The weighting factors take account of the different costs being incurred, dependent on the mail characteristics (e.g. letter or packet).

Factors important to the calculation then include:

- (a) *The definition of the element in terms of its level of aggregation:* The level of aggregation and the order in which the elements are combined can affect the costs directly attributed to the LRIC estimate.
- (b) *The cost driver:* In some instances traffic is not the primary cost driver, and cost driver relationships are combined to form the CVRs.

- (c) *The source and robustness of the CVRs:* For example, it might be appropriate to apply linear cost driver relationships in some situations or in the absence of reasonable evidence to the contrary.

We propose to document the assumptions and their rationale.

3.4 Capital costs

A significant amount of attention is given to the treatment of capital costs within the LRIC calculation for the telecommunications industry. In the postal sector capital costs form a lower proportion of the overall costs, but they are nevertheless important.

Royal Mail's FAC costing system applies HCA capital costs and depreciation. For LRIC these costs, whether existing or new, should be valued using Modern Equivalent Asset (MEA) values, to reflect the best in class capital investment available on a forward looking basis. Typically this considers the assets used and their modern equivalent, the life of the asset, the profile of its depreciation over time, termination value (if appropriate) and return (or cost of capital).

We propose to document the approach to capital costs used in Royal Mail's Top Down model of LRIC.

3.5 Cost exclusions

As the LRIC estimate assumes an efficient end-state operation, it may not need to consider the costs incurred in reaching an efficient state (e.g. restructuring costs). It may not need to consider a glide path of efficiency improvements over a time path (e.g. redundancy costs), historic pension deficit costs or one-off gains and losses in asset values. It assumes that the operating cost and capital assets are modified to represent efficient levels. The LRIC could be estimated on an efficient end-state over several years to take account of changes in demand, but in a Top Down model the emphasis is often on a single year where, for simplicity, it is assumed that investments and costs are smooth over time.

In relation to pensions, on-going pension costs could be included and treated as part of the labour costs where it is clearly a current market requirement. Historic deficit could be excluded in the LRIC calculations (particularly when used for the purposes of a competitive assessment). This would draw a distinction between the price control review costs considered by a regulator in having regard to financeability duties, where full recovery of costs is a relevant issue, and LRIC estimates that relate to product changes arising within an efficient forward looking operation.

3.6 Product group costs

The LRIC costs of elements of the various activities are combined to form a LRIC estimate of product groups using similar activities.

3.7 Summary

We have identified some of the key components present in the development of a Top Down LRIC model as follows:

- (a) The type of LRIC (1 to 3) and source of costs;
- (b) Definition of the element for the LRIC
- (c) The cost driver and cost volume relationships
- (d) The capital costs;

Following further development work on the Top Down model in 2011, we intend to publish further information on some of the assumptions and methodology, though the source costs, their levels and reconciliations will remain commercially confidential.

4. Specific postal factors

4.1 Introduction

This section provides a discussion of some factors relating to Top Down LRIC models for the postal sector that might differ from telecommunications.

4.2 Type of LRIC

In the telecommunications sector the general hypothesis is that the incumbent has an advantage over the entrant because it owns, and has sunk costs in, an existing network to which it can undertake incremental investments to meet increased demand. As such the incumbent's Type 1 LRIC estimate could be less than the Type 3 LRIC estimate of an entrant, where the entrant has no existing network or is smaller with lower economies of scale.

In contrast, in the UK postal sector there are at least some parts of the network (currently for example upstream deferred bulk mail) where the prevailing business model is that of the entrant. This might be associated with a regulatory regime that was intended to assist entry (with specific regulatory intervention adopted by Postcomm such as headroom regulation). Nevertheless, if the incumbent is downsizing its operational activities in a way that lags behind the decline in volume, it is conceivable that the Type 1 LRIC estimate could be above the Type 3 estimate, and that it would be informative to understand the Type 2 estimate. It might also then be informative to understand the Type 4 to 7 estimates, though these would be from a Bottom Up model.

We propose to develop the range of LRIC estimates formed from Type 1 to 3 estimates using the Top Down model.

4.2 Cost volume relationships

The labour cost might normally be thought of as fully variable operating costs with a cost volume relationship that is linear through the origin.

In the case of the postal sector, and in particular the function of delivery, there are significant economies of scale and scope associated with a principally labour intensive activity. The delivery cost function is driven by, amongst other factors, the number of delivery points, volumes weighted to take account of, for example, the workload of different format, number of items per delivery point and area covered. As such, its CVRs are unlikely to be linear through the origin.

4.3 The effect of declining market volumes

For the Top Down Type 1 LRIC model, costs need to be allocated for the total amount of volume using the network. This would ensure that all of the costs are related to volumes.

Whereas demand might be stable or growing in other sectors, volume decline and uncertainty are major issues in the UK postal sector, where electronic substitution or the extent of access and bypass creates significant uncertainty about the level of mail volumes being handled within different activities of an integrated network business going forward. Nevertheless, declining volumes over time have been encountered in a part of the telecommunications sector, and acknowledged by regulators, in relation to voice traffic over the legacy PSTN network.⁵

While the Type 1 LRIC model could be developed initially for the existing levels of demand, future levels should also be considered for Type 2 or 3. This could have two main effects. First, this could affect the volume denominator in the LRIC estimate of an asset that has a life over multiple years. Second, this could affect the cost numerator in the LRIC estimate of an efficient operator's capacity and capability requirements. In any forward-looking LRIC model, the forecast of demand is a key element to consider.

Taking the application of LRIC in the telecommunications sector as an example, Top Down LRIC models have modelled a network to meet the demand in the base year. However, consideration has then also been given to the future demand and its effect on the volumes and costs. This has required the development of forecasts of demand for relevant network services. Indeed, precedents from LRIC models in other sectors indicate:

- (a) In principle, the network dimensioning of the network should correspond to what an efficient operator facing these demand forecast would do.
- (b) An explicit account of future changes in demand might need to be considered, as well as possible changes in the mix of customers.⁶
- (c) In instances where LRIC models need to consider uncertain demand (eg, expected traffic for new generation mobile services), it is necessary to investigate the extent to which the model is sensitive to any forecast.⁷

⁵ For example, in the case of Danish fixed telephony, the LRIC hybrid model contains a number of negative growth rates. The regulator considered that in such a case, if the network was dimensioned so as to carry only the future lower traffic demand, it would be under-dimensioned to carry current traffic. Indeed the regulator states that 'the network should be dimensioned to be capable of carrying the largest amount of traffic within the planning period'. See, NITA (2009), 'Report on the LRAIC Model and User Guide: Revised Hybrid Model', November. Similarly, Ofcom also acknowledged the relevance of declining voice traffic in their cost modelling of BT's network charge control, although it should be noted that the adopted model was CCA FAC as a proxy for LRIC+, See Ofcom (2009), 'Review of BT's Network Charge Controls. Explanatory Statement and Notification of decisions on charge controls in wholesale narrowband markets', September 15th.

⁶ In Bottom Up LRIC, precedent from the telecommunications sector indicates that the network dimensioning would need to show, e.g, that telephone exchanges were sufficiently dimensioned to carry all the subscribers lines, that exchanges could carry all relevant traffic at peak times and that the modelled network has been design with sufficient resilience.

⁷ For example, in the case of the Top Down LRIC models for fixed telephony in Sweden and Denmark, the regulators recommended that the models should have the flexibility to examine changes in volumes, and that a sensitivity analysis on forecasted demand should be undertaken.

The extent of volume decline and any systematic over-capacity could be an important aspect of LRIC estimation.⁸ For any LRIC modelling, non-temporary declining volumes would be relevant for defining the efficient levels of operation and for defining the depreciation approach and profile over time.⁹

We propose to consider the impact of falling mail volumes on the estimation.

4.4 Volumes measurement

In the postal sector there is more than one measure of the key cost driver, mail volume. More specifically, there is revenue-derived traffic and operational traffic.¹⁰ The former is currently used for forecasting and the latter is currently used for the Regulated Accounts and deriving the product costs in the FAC costing system. However, the revenue-derived traffic is significantly less than the operational volume for some services (mainly stamped and metered) and, all other assumptions being equal, would therefore yield higher LRIC estimates in the presence of fixed costs. We are not aware of any economic principles that would indicate which measure should be used, and therefore either alternative could, in principle, be used.

We propose to proceed initially with reference to the revenue-derived traffic as it relates to the volume projections used in our plans.

4.5 Leased assets

Royal Mail treats leased assets as operating cost for its Regulated Accounts and business plans. The treatment of owned and leased assets is likely to be relevant for land, buildings (for Mail Centres, Delivery Offices and Regional Distribution Centres), and vehicles.

The use of owned or leased assets has been relevant for the treatment of some assets in Top Down LRIC models in the telecommunications sector — notably land and buildings. There is precedent in the case of buildings for the leasing cost to need to reflect the rental market value for the buildings.

We believe that the choice of owned or leased assets should not materially affect the LRIC estimation because they reflect market rates.

Post & Telestyrelsen (2002), *op. cit.*, Telestyrelsen (2001), 'LRAIC Model Reference Paper: Guidelines for the Top-Down Cost Analysis', April 6th. See also Essential Services Commission (2005), 'Estimating Long Run Marginal Cost: Implications for Future Water Prices', Information Paper, September, Victoria (Australia).

⁸ For example, Briglauer and Vogelsang (2009) explores the question of LRIC-based access pricing in markets where systematic non-temporary over-capacities exist. Briglauer, W. and Vogelsang, I. (2009), 'The Need for a New Approach to Regulating Fixed Networks', Working Paper, Wirtschaftsuniversität Wien.

⁹ The use of a tilted annuity could be considered as a means of stabilising the LRIC estimate for a given demand forecast.

¹⁰ Revenue-derived volume is calculated from dividing the total revenue for each product by an average unit price. Operational tariff is derived from multiplying the number of mail containers by the average fill of a full container, which is added to machine counts.

4.6 Summary

In this section we have discussed some factors relating to Top Down LRIC models for the postal sector that might differ from telecommunications. In particular we have looked at:

- (a) the types of LRIC estimates
- (b) an example of a cost volume relationship that is unlikely to be linear through the origin
- (c) the LRIC estimation in the presence of falling demand
- (d) the volume measurement
- (e) the treatment of leased assets.

5. Feedback and next steps

In the course of this discussion document we have sought to raise awareness of the development of LRIC estimates for the postal sector. We have explained what LRIC is and the reasoning behind its development by Royal Mail. We have provided an overview of the main components that are involved in Top Down LRIC model estimation. We have also highlighted some areas of consideration that are specific to the postal sector.

Following further development work on the Top Down model in 2011, we intend to publish further information on some of the assumptions and methodology used in calculating LRIC estimates. In advance of that document we seek your views on the following:

- (a) whether you consider LRIC to be relevant to the postal sector and whether you have any comments on the reasons for its development as discussed in Section 2;
- (b) whether you consider there to be any issues raised or omitted with our overview of the Top Down LRIC model in Section 3;
- (c) whether you consider there to be any issues raised or omitted with our discussion of specific postal related factors in Section 4.

Please send your comments on the above to Paul Dudley, Head of Regulatory Economics, Royal Mail Group 100 Victoria Embankment London, EC4Y 0HQ or e-mail paul.dudley@royalmail.com by 11 February 2011.