

Chapter 18

Telecom Costing in Canada: The Story and the Lessons

Fred Bigham¹

1.0 Setting the Stage

The need to count the costs is generations old. Shakespeare writes in Henry IV, Part 2:

When we mean to build,
We first survey the plot, then draw the model;
And when we see the figure of the house,
Then we must rate of the cost of the erection;
Which if we find outweighs ability,
What do we then but draw anew the model
In fewer offices,
or at last desist to build at all?²

This echoes even older literature as we find St. Luke's Gospel asking:

For which of you intending to build a tower,
sitteth not down first, and counteth the cost,
whether he have sufficient to finish it?³

Thus the story that follows is but one more in this apparently long-standing and common-place quest to identify costs in the midst of ordinary human commerce and endeavour. However, before beginning, it is appropriate to describe essential aspects of both the Canadian telecom industry and the Canadian regulatory arrangements.⁴

2.0 The Canadian Telecom Industry

More than sixty operating telephone companies provide telecom services to virtually all Canadians (i.e. standard penetration indicators show that over 98 percent of Canadians have access to the public switched telephone network with only a few not enjoying single-line service). Unlike most countries, Canadian operators charge a flat-monthly price which enables subscribers to gain access to the network and make an unlimited number of calls within a defined "local" service area. Calls made beyond this area are defined as long-distance calls and are subject to usage-based prices or tolls that vary with distance, length of call, and volume. Thus it is common parlance to refer to long distance service as toll service.

The largest PTOs are the member companies of the Stentor Canadian Network Management (Stentor) group.⁵ This group accounted for approximately two-thirds of the industry's total revenues of 21.8 billion CAD in 1995.⁶ The operating territories of these companies parallel the ten Canadian provinces with the exception of the largest, Bell Canada (Bell) which, in 1994, provided 9.7 million network access service connections (NAS)⁷ throughout Ontario and Quebec compared to the national total of 16.3 million NAS. Other operators include the recent facility-based entrants, Unitel Communications⁸ Inc., Sprint Canada Inc., Westel Telecommunications Ltd. and FONOROLA Inc., as well as a mix of municipal and generally smaller independent systems. These systems range from ED TEL Communication Inc. serving the city of Edmonton with 400,000 NAS and Québec-Téléphone at 270,000 NAS in a large sparsely-populated area of Eastern Québec (i.e. 40 percent of that province's total surface area) to other smaller independent systems operating primarily in Ontario and Québec, the majority of which have less than 5000 NAS. Telesat Canada operates a domestic satellite-based system leasing capacity primarily to the broadcasting industry and the operating telephone companies. Teleglobe Canada Inc. is the monopoly provider of international telecom services between Canada and all countries other than the United States and Mexico. In addition to these companies, there are over 50 resellers of telecom services operating in Canada. Finally, among the more recent entrants, Rogers Cantel Inc. and Mobility Canada, made up of affiliates of the Stentor group, provide cellular communications services. Most of these entities are investor-owned corporations with majority Canadian ownership and control.⁹ The long-standing exceptions are BC TEL and Québec-Téléphone, both of which are majority-owned by the Anglo-Canadian Telephone Company, a wholly-owned subsidiary of the United States based GTE Corporation. With the exception of this long-standing ownership arrangement, the foreign ownership restrictions set out in Canada's *Telecommunications Act*¹⁰ apply to all facility-based operators (i.e. those operators that own and operate transmission facilities). All resellers are exempt from these foreign ownership restrictions.

3.0 The Canadian Regulatory Arrangements

As a result of two relatively recent decisions in 1989 and 1994 by the Supreme Court of Canada¹¹ all providers of telecom services now come under the jurisdiction of the Canadian Federal Government. The principal federal legislation concerning the telecom sector is the *Telecommunications Act* which was proclaimed in October, 1993. That Act represents the first comprehensive reform of Canadian telecom law since the beginnings of federal regulation in 1906. Essentially, all Canadian carriers defined as "a person who owns or operates a transmission facility used by that person or another person to provide telecom services to the public for compensation" are subject to the *Telecommunications Act*.¹²

This Act also sets out the objectives of Canada's telecom¹³ policy and defines the powers of the federal regulatory agency, the Canadian Radio-television and Telecommunications Commission (CRTC). The powers granted to the CRTC include conventional regulatory authority to approve all tariffs and agreements ensuring that rates are just and reasonable; to grant and enforce network interconnection orders; and, to gather all necessary information from the regulated companies in fulfilment of its regulatory duties. The Act reflects the trend towards more competitive market structures

with powers to exempt specific classes of services from its provisions. Likewise, the Act requires that the CRTC forebear from regulation if certain criteria of sufficient competition have been met. Finally, it should be noted that for the first time the Act gives the Governor-in-Council the power to issue directions to the CRTC on broad policy matters.

The CRTC organisational structure is set out in the *Canadian Radio-television and Telecommunications Act*. That Act provides for the Governor-in-Council to appoint up to 13 full-time members of the Commission for terms not to exceed five years. These members, as well as up to six part-time members, form the Executive Committee of the CRTC under the direction of an appointed Chairman.

With respect to telecom, the day-to-day operations of the CRTC are shaped by the *CRTC Telecommunications Rules of Procedure* which define the administration processes to be followed depending on the type of application submitted to the CRTC by the regulated companies. The types of submissions include applications for the approval of new or amended tariff pages; general rate increases; interconnection agreements; and, other more general and often benchmark applications for entry into specific market segments. For instance, in fiscal year 1994-95 the CRTC received a total of 2,048 telecom applications. The disposition of most of these applications took place in the regular meetings of the Tariff Committee, a duly constituted subcommittee of the Executive Committee, based on the written submissions of the applicants and the analysis of the Commission's professional staff. Some applications were judged as having potentially more far-reaching or cross-company effects and public notices were issued (59 in 1994-95). Most of these applications were also dealt with by the Tariff Committee based on the written submissions of applicants and other interested parties.

A few applications each year warrant a full public hearing process (i.e. three in 1994-95) before a selected panel drawn from the full-time Commissioners with the inherent accumulation of a detailed and voluminous record including the transcript of public hearings at which witnesses are subject to (sometimes intensive) cross-examination. The disposition of these applications takes the form of a written CRTC Telecom Decision which is publically accessible.

4.0 The Telecom Costing Story

Telecom costing for regulatory purposes in Canada unfolds in the period, 1969 to 1996. This chapter has a two-fold purpose, one, to tell that story and two, to draw lessons from this experience. It begins with the formation of the conceptual framework for costing, making this framework operational, documenting the cost assignment procedures and producing actual revenue/cost results. It then reviews application of the results for regulatory and corporate purposes, and finally adapting the procedures and presentation of results in the face of emerging competition and revised regulatory frameworks. While both the story and the lessons reflect the particular circumstances of Canada; this experience with cost analysis for telecom regulation should be instructive both for the regulators in countries which have not yet entered the costing arena, and for students of the regulatory process.¹⁴

At the outset, two observations warrant special attention. First, while there is a vast literature on cost concepts generally, there is limited literature and experience with making cost concepts operational in the telecom sector to the point of actually producing

results (see Kahn and Shew 1987, and Larson 1989). Second, the task of cost identification is all too often side-tracked if not detoured into meaningless dead-ends by concerns about the equally valid task of setting prices to recover costs. This latter task requires an ongoing selection of prices to meet an evolving mix of regulatory and corporate policy objectives. While this chapter has no intention to claim that costing is an exact science, in the author's view, the sometimes obvious, sometimes subtle blending of the task of costing with the task of cost recovery has led some people to assume incorrectly that costing results are invariably shaped by predetermined agendas, be they corporate or regulatory. This chapter, therefore, will maintain a distinction between these two tasks and, as a result, argue that costing results can indeed inform rather than be effectively subverted by the objectives of pricing for cost recovery.

As the Canadian experience is summarised, there will be numerous references to Canadian Radio-television and Telecommunications Commission (CRTC or the Commission) public notices, reports, orders and decisions relating to telecom matters. Full citations are provided as references but to avoid clutter, a standard short-form will be used. For instance, the citation, "Decision 85-10", will be used for "Inquiry into Telecommunication Carriers' Costing and Accounting Procedures: Phase III – Costing of Existing Services, Telecom Decision CRTC 85-10, 25 June 1985". The reader may note that the first number "85" indicates the year in which the decision was issued and the number "10" simply connotes that it was the tenth decision issued in that year.

5.0 The Road to Results

The story of costing for purposes of telecom regulation in Canada began during a 1969 public hearing to consider a Bell application for general increase in its prices (or rates). In its rate case decision, the Canadian Transport Commission (CTC), which then regulated telecom, announced its intention to investigate concerns that Bell's traditional monopoly services could be cross-subsidising the emerging competitively-provided services, to the detriment of both its monopoly subscribers and its competitors.¹⁵ Subsequently, in January, 1972 the CTC issued terms of reference for an, "Inquiry into Telecommunications Carriers' Costing and Accounting Procedures", known thereafter as the "Cost Inquiry". A consulting firm with experience in cost analysis was employed to assist the CTC and a seven volume report was submitted in October, 1974. No action was taken on the report's recommendations as other discussions were underway to formally shift regulatory jurisdiction for federally-chartered telecom operators from the CTC to the CRTC effective 1 April 1976.

In August 1977, the CRTC announced its plans to conduct a major Cost Inquiry. Phase I of the Inquiry addressed threshold accounting and financial issues including appropriate depreciation practices, criteria for capitalisation versus expensing certain plant expenditures and the appropriate rate base calculation for regulatory purposes. The Phase I directives were set out in Decision 78-1 and, with some amendments, continue to be applicable.

Phase II (Decision 79-16) considered the procedures to be followed in estimating anticipated streams of revenues and costs associated with a specific service, or course of action such as the introduction of new telecom service. Consequently, a Phase II study summarises the net difference between these two streams in an indicator known as the net present value (i.e. future streams of revenues and costs are discounted back to the present

using an appropriate time value of money). If this indicator is greater than zero, it suggests that the planned course of action will prove to be economically viable. Bell's "Procedure Manual for Economics Studies of New Services, July, 1986" documents the standard procedures used in the company's Phase II studies. The other federally regulated carriers have adopted similar procedures consistent with standard textbook net present value analysis with, of course, application to the operations of a telephone company. In 1995 the CRTC decided to conduct a proceeding (i.e. Public Notice 95-19) that examined various aspects of the Phase II costing implementation of a split rate base regulatory framework (i.e. Decision 94-19).

Late in 1981, the CRTC turned its attention to the design of the Phase III methodology to be used to associate actual company revenues and costs with a set of prescribed broad categories of existing services. In the next six years Phase III moved through four stages:

1. the confirmation of a conceptual framework for category costing;
2. the specification of classification and assignment guidelines to make that framework operational;
3. the actual preparation of the Phase III assignment and allocation Manuals with the initial production of revenue/cost results; and
4. the final regulatory approval of the Manuals with a specification of audit, update and review processes to maintain the integrity of the annual results.

6.0 Confirmation of a Conceptual Framework

The Phase III conceptual framework was confirmed in Decision 85-10.¹⁶ The Commission's requirement for a methodology to assign actual revenues earned and actual costs incurred among prescribed broad categories of services based on the principle of cost causation was the primary foundation. Two other key features were the selection and definition of the broad categories of services to be used, and the requirement that the summation of results across the categories reconcile with the standard company-wide financial statements submitted in general rate proceedings.

At the outset, seven broad categories of service were prescribed, Access (A), Monopoly Local (ML), Monopoly Toll (MT) (i.e., long distance), Competitive Network (CN), Competitive Terminal (CT), Common and Other. Subsequently, Decision 86-5 divided the Competitive Terminal category into the Competitive Terminal Multiline and Data (CT(MD)) and the Competitive Terminal Other (CT(O)). To achieve closure with the company's financial statements two additional reporting categories were established, one for Plant Under Construction (PUC) and another for Investments in Subsidiaries and Affiliates (ISA). More recently, reflecting Decision 92-12 permitting long distance competition, the Monopoly Toll category was renamed Competitive Toll (CT). Consequently, the category definitions included in Bell's Phase III Manual, Overview, pp. 6-9, as of June, 1995 are as follows:

6.1 Access (A)

The facilities associated with the Access broad service category and their associated costs are composed of three separate components:

(i) *Subscriber Premises Equipment*

- Includes costs related to the equipment and connections provided on a monopoly basis but excludes all other subscriber premises equipment and connection costs which are included in either the Competitive Network or the Competitive Terminal categories. The equipment and connections provided on a monopoly basis and the boundary between the Access and Competitive Terminal categories (demarcation point on the customer's premises) are determined pursuant to *Attachment of Subscriber-provided Terminal Equipment*, Telecom Decision CRTC 82-1.
- In some cases, includes costs associated with terminal equipment used to provide the subscriber with access to a service which can only be provided by the carrier. A specific example is the PBX line card required for a centralised emergency reporting system.

(ii) *Loop*

- Includes all costs associated with the provision by the Company, for any purpose, of an interconnecting facility between a customer's premises and the nearest serving central office, and, the termination and protection of the interconnecting facility at both the customer's premises and the serving central office.
- Includes interconnecting facilities normally consisting of outside plant.
- Includes related equipment required to derive the interconnecting capability, e.g. subscriber line carrier systems, and line concentrator equipment.
- If interconnection is provided by a radio system, the loop component includes all costs associated with the radio base station equipment and interconnecting facilities to the serving central office.

(iii) *Serving Central Office Equipment*

The costs associated with central office equipment required specifically to derive communications channels between a subscriber's premises in the exchange area and the central office location are to be included in the Access category. Such equipment includes subscriber carrier systems of various technologies, line concentrators, and the terminating equipment and facilities, such as the MDF or equivalent for other technologies. A line concentrator functions as a pair gain unit located between the line card (or the switch itself or in a remote) and the subscriber. Service-specific equipment located in the central office is to be included in the appropriate category.

6.2 Monopoly Local (ML)

The Monopoly Local broad service category includes the costs related to the provision, operation and maintenance of those local switching equipment and interoffice

transmission facilities required to establish and maintain communication services within the local calling area that generally are not provided by another supplier.

6.3 *Competitive Toll (CT)*

The Competitive Toll broad service category includes the costs related to the provision, operation and maintenance of the switching equipment and facilities required to establish and maintain public voice communications services switched between local calling areas.

6.4 *Competitive Network (CN)*

The Competitive Network broad service category includes the costs related to the provision, operation and maintenance of those facilities required to establish and maintain communication services that are, or can be provided by another supplier, with the exception of the facilities included in the Access and Competitive Toll broad service categories.

The costs associated with terminal equipment which is specific to competitive network service and is company provided as an integral part of the service, are included in this category.

6.5 *Competitive Terminal Multiline and Data (CT(MD))*

The CT(MD)) broad service category includes costs associated with:

- Key telephone systems;
- PBX systems;
- Telephone sets behind key systems, PBX systems and Centrex systems except Centrex proprietary sets and consoles;
- All data terminal equipment at the customers' premises not integral to the operation of the channel provided by the carrier; and
- Inside Wiring on the customer side of the demarcation point associated with multiline and data terminals.

The costs associated with terminal equipment which may be located on a customer's premises but is provided by the company as an integral part of a network service is included as appropriate in the Competitive Network, Competitive Toll or Monopoly Local broad service categories.

6.6 *Competitive Terminal Other (CT-O)*

The costs associated with terminal equipment other than that which is identified above is included in the Competitive Terminal Other broad service category. This consists primarily of the costs associated with single-line telephone sets except sets provided on a monopoly basis which are included in the Access Category.

6.7 *Other (O)*

The Other broad service category includes the causal costs associated with activities and services which, in general, do not relate directly to the provision of telecom services and are not included in the other service categories.

6.8 *Common (C)*

The common broad service category includes costs which cannot be causally related to a particular service category and which, with the support of empirical evidence, are shown to be fixed.

6.9 *Plant Under Construction (PUC)*

The PUC reporting category includes the costs that pertain to the Company's plant under construction.

6.10 *Investment in Subsidiaries and Affiliates (ISA)*

The ISA reporting category identifies those balance sheet and income statement items that pertain to the Company's investment in subsidiary and affiliated companies.

The Access and Common categories are of particular conceptual interest. The creation of these two categories marked the Canadian approach to category costing, at that time, as distinctive if not unique. The Common category comprises those overhead and administration costs not directly causally related to the output levels of the other categories. These common costs in Bell's first set of audited Phase III results (1987) accounted for 5.7 percent of the company's total operating expenses. In Bell's most recent set of audited Phase III results (1994) this percentage had declined to 4.0 percent. Creation of this category avoided debate over the use of what some analysts consider an arbitrary allocation rule to fully distribute such costs. The appropriate recovery of these costs becomes a cost recovery task and a matter to be resolved through regulatory judgement in the context of general revenue requirement proceedings.

The Access category comprises those costs associated with the local loop and other non-traffic sensitive facilities required to connect subscribers to the telecom operator's networks. Creation of this category was based on the conclusion that a carrier's investment in these facilities is not caused by how subscribers choose to use network facilities, but rather by the subscribers' requirement for a capability to initiate or receive voice or data transmissions. While creation of this category did not resolve how its large revenue shortfall should be recovered, the category's existence visibly illustrated that access costs were not considered to be causally linked to either local or long distance services, but rather to the subscribers who want to be able to either initiate or receive calls. Creation of the Access category kept the distinction between the tasks of cost assignment and cost recovery intact.

Another central issue at the outset was the need to choose between two available costing systems. One system, the Five-Way Split Study method, implemented by Bell in 1979, adapted and made extensive use of the service planning systems originally designed to model the company's provisioning processes and thereby produce estimates of prospective costs and revenues. The capability of these planning systems to produce estimates of multi-year projections of prospective costs for input into net present value studies (i.e. Phase II studies) was adapted in the Five-Way Study method to develop

ratios that apportioned both the company's booked investment and operating expenses among five broad categories of service.

The other available costing system, the Revenue Settlement Plan (RSP) costing method, had been implemented by the telephone companies across Canada, the TransCanada Telephone System (now Stentor), in 1976 to determine the recoverable assigned costs (RACs) incurred by each company in its provision of cross-Canada services. The RACs represented each member company's first claim on the revenue available for settlement among the member companies. While the RSP contained additional processes as well for revenue settlement purposes, the costing method used to determine the RACs provided an alternative operational system to apportion a carrier's booked investment and operating expenses among broad categories of telecom services.

It was recognised, however, that important adaptations of the industry RSP costing processes would be required if they were to be useful for regulatory costing purposes. There was a need to identify and assign excluded investment, and operating expenses; to re-classify certain services from monopoly to competitive categories; and, to assign investment in spare capacity-based on the working capacity already associated with each category of service.

In Decision 85-10, the Commission took into account the Inquiry Officer's finding that, while either one of the costing methods could be adapted to meet Phase III regulatory purposes, the RSP-based costing method was recommended because it would likely satisfy the criterion of audibility established by the Commission in Public Notice 1981-41 (i.e. corporate audit systems had been implemented in conjunction with the adoption of the RSP settlement procedures). However, the Commission decided to assess the relative merits of the two methods on the basis that both could meet the requirement of audibility.

The two methods were assessed with respect to seven factors. The three most significant were judged to be:

- The relative reliance of the two costing methods on empirical rather than computer simulated data in the development of apportioning factors;
- The complexity of the two costing methods and their relative ease of comprehension by interested and informed parties; and
- The relative ease and expense of performing ongoing regular audits of the two costing methods.

For each of these factors, the RSP-based costing method was assessed by the Commission to be the more suitable approach for its regulatory purposes. An additional four factors were identified as:

- The desirability of adopting a costing method congruent with the costing processes used for revenue settlement purposes;
- The flexibility of the two costing methods to take into account the introduction of new services or the restructuring of existing services;
- The adaptability of the two methods to produce results on a forward test year basis; and

- The extent and costs of the required one-time modifications to the two costing methods.

With respect to these factors, the RSP method was favoured in the case of the first factor only whereas the Five-Way Study method was favoured for the other three factors. Weighing the factors together, the Commission concluded, in Decision 85-10, that the more suitable Phase III costing method for use by its regulated telecom operators, Bell and BC TEL, was the RSP-based costing method.

Another central issue was whether embedded (i.e. book) or current costs or a combination of both provided the best basis for regulatory costing purposes. It became clear in the Phase III proceeding that financial reconciliation of the category revenue and cost information with the conventional balance sheet and income statement submitted in general rate proceedings was an essential aspect of category costing. In the earlier Phase II proceeding, the Commission had adopted the costing approach to be used in the evaluation of new or significantly changed service offerings. The Commission saw value in having two costing approaches, one for evaluating the actual performance of broad categories of service measured through an assignment of revenues and costs as recorded in the company's accounting records (i.e. embedded); and another for evaluating the anticipated performance of a new individual service through an analysis of the economic (i.e. current) value of its prospective cash flows.

In summary, the Phase III conceptual framework established by the CRTC in Decision 85-10 specified:

- Eight broad categories of services (i.e. Decision 86-5 subdivided the CT category into CT(MD) and CT(0));
- Assignment of actual incurred costs based on the principal of cost causation;
- Assignment of usage sensitive costs based on peak period usage measurements as employed in an operator's network provisioning process;
- No costing procedures to allocate the residual unassignable overhead costs;
- Submission of periodic results for only a limited number of broad categories, but there was provision for special revenue/costs studies at a more disaggregated level than the prescribed categories if required, using a Commission prescribed method;
- Revenue/cost results to be reported both annually and on a forward test year basis in conjunction with any general rate cases, reconciled to the company's financial statements;
- Costs in excess of revenues in the Access category to be recovered through appropriate contributions from other prescribed categories subject to the possible creation of access tariffs in the future.

Decision 85-10 directed Bell and BC TEL to file a report by October 1985 on the implementation of an RSP-based costing method consistent with this conceptual framework.

7.0 Implementation of the Conceptual Framework

The next challenge was to convert the Phase III conceptual framework into an operational category costing methodology. Once the operators had submitted their initial reports, staff meetings were held with both Bell and BC TEL culminating in the Commission's publication of a Phase III Guideline in August, 1986 (Order 86-516) to be followed by each operator in the preparation of its Phase III Manual. The Guideline specified the assignment procedures relating to each company's revenues, plant investment and expenses. These procedures were to be documented in a Manual in sufficient detail to permit a standard audit validation of the Phase III results.¹⁷

A detailed classification of each company's tariffed services into the Phase III categories drives the assignment of revenues. To further facilitate these assignments, Bell subsequently revised the structure of its operating revenue accounts to match the Phase III categories. The assignment of telephone plant investment, with certain adaptations, uses the study processes adopted in the mid-1970's by the major Canadian operating companies for their own revenue settlement purposes. These adapted study processes use direct assignment of costs to the service categories where possible, but large portions of the plant (i.e. switching and transmission facilities) must be classified into functional groupings and then assigned.

Assignment of those plant functions that are used in common for local, long-distance or competitive services employ appropriate busy period usage measurements to determine assignment factors. The assignment of plant provides the base for the assignment of all plant-related expenses (i.e. maintenance, depreciation and operating taxes) as well as financial expenses and income taxes. The remaining operating expenses comprise, in large measure, the salaries of telephone company staff performing functions not related to the provisioning and maintenance of the telephone plant. Assignment of these salary amounts, account by account, requires an analysis of the employees' work activities in relation to the service categories, and the selection of a measurable aspect of these activities that can be causally linked to those categories.

Once the expense accounts for the main activities have been assigned, there is a basis for the assignment of associated activities (e.g. training expenses) and the loading of other general support expenses (e.g. personnel and medical activities). As noted earlier, the Phase III approach made provision for those residual overhead expenses with no identifiable causal link to a particular service category, by creating the Common cost category.

7.1 *Approval of the Phase III Manuals*

The Phase III Guidelines were issued in August 1986 and one year later Bell and BC TEL submitted, for approval, their respective Phase III Manuals with an initial set of unaudited Phase III results. It is important to highlight and acknowledge the vital role taken by the company staff to design and document the Phase III assignment procedures and then apply those procedures to produce revenue/cost results by class of service. Of course, this does not diminish the need for regulatory oversight but meaningful costing results require a working relationship between regulatory and company staff that blends professional respect for one another's role with a recognition that each staff team values its integrity. Decision 88-7 accepted the Manuals for regulatory purposes and established three

processes aimed at ensuring, on an ongoing basis, the relevance and integrity of the Manuals' procedures and the credibility of the Phase III results submitted each year.¹⁸

To ensure the credibility of the results, the Commission directed each carrier to engage its external auditor to carry out an annual Phase III audit, with provision for a Commission auditing consultant to review and report each year with respect to both the audit plan and the auditor's working papers. To maintain the relevance of the Manuals, an annual updating process was established providing for notification by the carriers of all proposed changes with supporting reasons (i.e. prompted by changes in accounting procedures and the ongoing introduction of new services). There was provision for the issuance of public notices by the Commission to seek comments on any major changes in the Manuals' procedure.

Finally, Decision 88-7 established a staff review process to allow for the periodic examination of particular studies and procedures with the intention of identifying possible refinements and improvements. If there is agreement between the company and the Commission staff, a proposed modification of Phase III assignment procedures is submitted for approval through the established updating process. If there is no agreement, particularly with respect to a Commission staff proposal, then a public proceeding can be initiated and the Commission will make its determination on the basis of the written submissions received from interested parties.

The first sets of audited Phase III results were submitted by Bell and BC TEL for the calendar year 1987, and annual results have been submitted up through 1994. Table 1 summarises the 1994 audited Phase III results for Bell. The service categories described above are displayed as well as a more recent subdivision of the Access category. The Average Net Investment corresponds to and reconciles with Bell's standard non-consolidated balance sheet statement, and the calculation of the Revenue Surplus/Shortfall corresponds to and reconciles with Bell's standard non-consolidated income statement.

| Service Category | Average Net Investment | Operating Revenues | Operating Expense | Financial Exp. and Income Tax | Adjustment | Revenue Surplus (Shortfall) |
|---|------------------------|--------------------|-------------------|-------------------------------|-------------|-----------------------------|
| Access: | | | | | | |
| Residence | 4050 | 116 | 1055 | 515 | (115) | (1569) |
| Business | 1399 | 117 | 539 | 178 | (49) | (649) |
| Other | 423 | 218 | 169 | 54 | 3 | (2) |
| Contribution | 71 | 98 | 40 | 9 | (1) | 48 |
| Common | 1 | 0 | 4 | 0 | (1) | (5) |
| Subtotal | 5944 | 549 | 1807 | 756 | 163 | (2177) |
| Monopoly Local | 4013 | 2682 | 1262 | 519 | (53) | 848 |
| Competitive Toll | 1845 | 2644 | 1038 | 236 | (56) | 1314 |
| Competitive Network | 1977 | 599 | 698 | 255 | 172 | (182) |
| Competitive Terminal (Multiline and Data) | 375 | 476 | 472 | 44 | 38 | (2) |
| Competitive Terminal (Other) | 247 | 340 | 224 | 32 | (16) | 68 |
| Other | 289 | 383 | 7 | 38 | 1 | 339 |
| Common | 79 | 0 | 232 | 10 | (25) | (267) |
| Investment in Subs. | 373 | 0 | 0 | (23) | 47 | 70 |
| Plant Under Construction | 335 | 0 | 0 | 31 | 19 | (12) |
| Total | 15478 | 7673 | 5740 | 1896 | (37) | 0 |

Table 1 – Bell Canada 1994 Phase III results summary
calculation of revenue surplus/shortfall
(CAD millions)

A few general observations on these results may be instructive. First reconciliation of the category results with the company's balance sheet and income statements is a key feature of Phase III results. The study reveals where the company's assets are deployed and shows the predominance of the company's assets in its Access category (i.e. 38 percent of Bell's total net investment base). The revenue surplus/shortfall results display surplus revenues (i.e. net revenues after deduction of all direct causal costs, including a corporate-wide rate of return on assets employed and associated income taxes) in the monopoly local, competitive toll, competitive terminal and other service categories except Access and Common. However, these results display revenue shortfalls in the competitive network and competitive terminal (multiline and data) categories, which suggests that these market segments were not performing as expected.

It should be noted that future submissions of service category results will reflect the revised "split rate base" framework with only two categories – the Utility and Competitive Segments. Therefore, the shortfalls observed in the 1994 results would not be discovered as the results of all competitive services will be subsumed into the single competitive services category. The split rate base approach intends that the risks and rewards of the ongoing financial performance of the competitive services will be borne by the company's shareholders and neither be subject to traditional earnings regulation nor be able to enjoy regulatory-approved rate relief.

The shortfall in the Common category is expected because no revenues are assigned to this category by definition. This shortfall represents the company's standard overhead cost of operation which cannot be causally linked to any of the service categories. In many US regulatory jurisdictions there has been a rather unproductive debate, in this author's view, about how to "fully-distribute" these costs. The Canadian approach to costing side-stepped this debate by creating the Common cost category with the recognition that, while these costs must be recovered, the recovery is clearly a matter of regulatory and corporate judgement in setting the general pattern of rate levels rather than a matter of cost allocation.

The shortfall in the Access category is very large and expected in the Canadian context because of the conventional pricing of telephone services which continues, for now, to generate sizeable revenue surpluses in the Monopoly Local and Competitive Toll categories, the major users of the access network. This contrasts with the US pricing scheme which set charges to recover most of these access-related costs directly from end-users.

7.2 Extension of Phase III Approach to Other Carriers

In the years that followed the approval of the Phase III Manuals submitted by Bell and BC TEL, the approach was implemented by all other Stentor member companies with the exception of SaskTel¹⁹. Each Stentor member, taking into account its company-specific Phase III Guideline issued by the CRTC, has submitted a Phase III Manual with category results. All these Manuals have received the Commission's approval.

8.0 Two Subsequent Developments

8.1 Official Telephone Service

The first matter relates to the appropriate Phase III treatment of the costs incurred by regulated carriers in the provision of "Official Telephone Service" (OTS). This procedure has consumed considerable regulatory energies since the initial Manuals of Bell and BC TEL received approval in 1988.

Telecom services are used by the operators for both the routine administration of their business affairs and the monitoring, surveillance and test activities to maintain the operational integrity of the networks. OTS is that portion of the telecom services used by a carrier in its administration activities but not its network management activities.

Bell and BC TEL introduced a net adjustment for OTS services into the initial 1986 Phase III results. The net adjustment takes into account, for example, that the company's employees may make extensive use of facilities associated with the long distance category, but that use may be in one case sales advice for the initial installation of services (i.e. an Access category activity) and in another case design information for a large private line data network (i.e. a CN Category activity). As a result, the OTS adjustment nets the cost of the official services supplied by a category against the cost of the official services used in that category's administrative support.

The original guidelines had not provided for any explicit recognition of OTS in the calculation of Phase III results. However, in Decision 88-7, the Commission concluded it was appropriate to define a Phase III procedure for the treatment of OTS although the proposed calculation procedures were modified. A formal application by

Unitel (a newly formed competitive operator) in late 1990 identified a number of concerns with OTS. An on-site review of the companies' provisioning and use of OTS was undertaken by the Commission.

The objectives of the OTS Review, set out in Decision 91-18, were to obtain and assess information relating to specific criteria used to distinguish between, (1) the facilities and equipment used for the administration of the carriers' business and those used for monitoring, surveillance, testing and other operational purposes; (2) the types and quantities of facilities and services used, and the purposes for which they are used; and, (3) the company processes related to the initiation, approval and implementation of new or additional OTS usage.

Decision 92-16 accepted the recommendations set out in "Official Telephone Service, CRTC Review Team Report" as appended to the decision. The companies were directed to submit a number of follow-up reports but the Commission indicated it was satisfied that both Bell and BC TEL had adequate procedures in place to ensure management control of OTS costs.

Then, in Decision 93-10, the Commission, having assessed the OTS follow-up reports, accepted the companies' proposed refinement of the definitions of those services to be included as OTS. Secondly, the Commission accepted BC TEL's approach to modify the calculation of costs of OTS sourced from the Access category and thereby corrected an overstatement of OTS costs being attributed to that category. Finally, a proposal to exclude operators and certain occupational groups from the salary and wage ratios used to assign each category's consumption of OTS costs was accepted to better reflect the actual usage of OTS by the companies' employees.

OTS represents a corporate expense which has always existed, but which had not been explicitly identified until the initial production of Phase III study results. In the author's view, the effort to identify this corporate expense in an explicit fashion has sharpened management's awareness of this rather significant expense factor in the operation of a modern telecom carrier (i.e. in 1994 Bell's calculation of the costs associated with OTS was 418 million CAD).

8.2 Access Category Subdivided

A second development since the initial approval of the Manuals in 1988 relates to the subdivision of the Phase III Access category. As far back as Decision 85-10, it had been noted that the large net revenue deficit in the Access category (i.e. Access costs exceeded Access Revenues) would, under existing tariff arrangements, be recovered through contributions from the other Phase III service categories. However, it was recognised, that access costs might, in the future, be recovered, in whole or in part, by a separate set of tariffs designed for that purpose. Subsequently, Decision 88-7 concluded that there was a need to proceed with a disaggregation of the Phase III Access category costs into appropriate subcategories. Terms of reference for this subdivision of the Access category were announced in Decision 90-20 with provision for staff discussions both to reconcile the Commission's requirements for access cost information with the practical capabilities of the carriers' data bases and information systems, and to develop implementation schedules. These discussions were summarised and issued by CRTC staff as the Access Study Guidelines in August 1991 with subsequent approval by the Commission in April, 1992 (Order 92-529).

These Guidelines directed Bell and BC TEL each to submit a draft Access Study Manual capable of subdividing the plant investment, revenues and expenses associated with the existing Access category into five subcategories. The three primary subcategories were defined as follows:

- *Residential Access* shall include all carrier provided facilities and equipment defined as Access and required to provide residential subscribers with access to the public switched telephone network.
- *Business Access* shall include all carrier provided facilities and equipment defined as Access and required to provide business subscribers and access to the public switched telephone network.
- *Other Access* shall include carrier provided facilities and equipment defined to Access and required to provided dedicated access that is not connected to a telephone company central office; or access to other than public switched telephone network services that is connected to a telephone company central office.

Discussions indicated the possibility of a small component of cost which can be causally linked to the Access category taken as a whole but not to any one of the three primary subcategories (e.g. certain research and development expenses). Therefore, consistent with the original conceptual framework of Phase III provision was made for an Access-Common cost subcategory. There was also discussion of the appropriate assignment of those contribution charges paid by entrants in partial compensation for the incumbents' surplus long distance revenues displaced by either the new facility-based carriers' or resellers' services. It was concluded that these contribution payments should be disassociated from the revenues earned by the incumbents through the leasing of access facilities to competitors and resellers. Therefore, provision was made for such contribution revenues to be assigned to an Access-Contribution subcategory whereas the payments for the actual use of access-related facilities were to be assigned to the Access-Other subcategory.

The Access Study Manuals submitted by Bell and BC TEL were approved and subsequently audited results were submitted for study years 1993 and 1994. These subdivided Access results were intended to focus and inform the ongoing policy debate as to how best to recover the sizeable access-related costs. This debate continues as market circumstances are stimulating the established operators to reduce rates for services, and thereby diminish availability to recover Access category costs.

9.0 Regulatory Use of Results

Once Phase III results were available, reported revenue shortfalls in competitive categories drew attention.²⁰ Identification of such shortfalls was indicative of cross-subsidisation from monopoly categories, and indeed this concern had been the initial catalyst for the Cost Inquiry.

In Letter Decision 88-11 it was noted that BC TEL's reported revenue shortfall in its CN category suggested there was a violation of the Commission's policy that rates for services within that category be set to maximise their net revenue contribution and at least be compensatory. In response both BC TEL and Bell applied for a variety of rate

increases and decreases in their respective CN services. Decision 89-6 dealt with these applications and it is worth noting the following Commission's of submissions:

In its reply, Bell submitted that the Commission, in attempting to assess maximisation of contribution, should not rely solely on a single year's Phase III results, but should adopt a view to maximisation of contribution over a longer period. Bell noted that the Commission's decision in Phase II of the Cost Inquiry established the principle of the maximisation of contribution over the long term. Bell submitted that the availability of various indirect competitive alternatives limits the company's ability to introduce significant price increases while maximising contribution over the longer term. Bell urged the Commission to resist the temptation to attempt to maximise Phase III contribution in a calendar year by introducing substantial across-the-board increases in the CN category. In Bell's view, Phase III results must be viewed as only one of several tools for the analysis of appropriate rate action for competitive categories.

In response to competitor concerns regarding the cost studies filed in this proceeding, Bell and BC TEL stated that individual service cost studies were one of many factors used in the development of the companies' rate proposals. Bell submitted that the studies are useful for the purpose of planning rates (Decision 89-6, pp. 22-24).

Subsequently, in Decision 89-12, the Commission articulated a general approach to address cross-subsidisation concerns. The approach had three essential features. First, it was recognised that Phase II prospective economic studies are subject to uncertainty and, although individual services within a category will be at various points in their respective life cycles, a reported revenue shortfall in a Phase III competitive service category is an indication that the actual performance of some services must be markedly below predicted performance and that appropriate corrective action needs to be taken.

Secondly, the Commission noted that its legal authority permitted corrective rate action only on a prospective basis. Consequently, the Commission modified the filing requirements for Phase III results with a provision that carriers file annually, in September, audited results for the prior calendar year and then, in December, forecast results for both the current and upcoming year.

Thirdly, the Commission directed that, if an operator's forecast Phase III results projected a competitive category shortfall, then a supporting analysis of the causes and possible remedies (i.e. rate increases, cost reductions, abandonment of specific services) was to be submitted for the Commission's consideration.

In addition to this detection of cross-subsidisation, Phase III results were available to monitor the outcome of initiatives taken to move the general structure of telecom rates towards the underlying cost structures. In fact, in the mid-1980's, the Commission, while not persuaded that full rebalancing was either necessary or desirable, indicated that economic and societal benefits would result from a reduction in the carriers long-distance rates (i.e. Decision 85-19). As a result, the Commission adopted the principle that, for Bell and BC TEL, the existing total contribution from long-distance rates (i.e. the net revenue surplus) should, at a minimum, not be permitted to increase. Indeed, in subsequent years, long-distance rates were reduced substantially although a number of factors in addition to the Commission's Decision 85-19 influenced these rate reductions.

One may observe the broad effects of these initiatives in the year over year Phase III results. The relative contribution towards the recovery of the very large Access

category shortfall from the local versus long distance revenue surpluses can be used to identify the aggregate effect of rate rebalancing initiatives. Observation of Bell's Phase III results over the 1987 – 1994 period indicates a decline in the relative contribution made by the surplus long distance category revenues to the Access shortfall from 67 percent in 1987 to 60 percent in 1994. This outcome, it should be recalled, has been realised without any general rate increases in the flat-rate monthly charge for local service over that period.

A third use of Phase III results was initiated in Decision 92-12 which opened the Canadian long-distance voice market to competition. Entrants are obligated to make a contribution payment to the incumbent operators. This payment is intended as the new entrant's proportionate contribution towards the recovery of the access-related costs, although it can also be viewed as an amount to replace that portion of the long-distance surplus lost to new entrants by the incumbent carriers. Along with projected toll minute data, the annual forecast Phase III results provides the benchmark information to calculate the entrants' contribution payments.²¹ In direct proportion to any shift towards cost-based pricing, including the possibility of explicit access-related tariffs, the required target contribution payment will continue to fall. This is illustrated by the contribution charges set by the Commission over the period from 1992 to 1996. Bell's imputed contribution payment expressed in cents per minute of traffic per end (i.e. payment is required for both originating and terminating traffic) was .0724 in 1992 declining to a proposed .0234 in 1996.

The actual contribution payments required from the new facility-based entrants is subject to a number of adjustments including an approved contribution discount which was to apply in the 1993-1997 period. These payments by the entrants vary across the Stentor companies but, for instance, the amount to be paid in Bell's territory was 0.485 cents per minute per end in 1992 with a decline to 0.0281 cents in 1996. Likewise, resellers in Bell's territory have seen their required contribution charge fall from 0.0340 cents in 1992 to 0.0211 cents in 1996. The annual filing of forecast Phase III results and now Split Rate Base (SRB) results continues to provide the benchmark data for the computation of the entrants' contribution payments as well as the means to monitor how this benchmark is being effected by market and pricing initiatives.

Fourth, Phase III results provided the foundation data to implement a split rate base i.e., separation of investment and associated expenses, as part of the CRTC's revised regulatory framework announced in Decision 94-19 and worked out in more detail in Decision 95-21. The split rate base approach grouped the existing Phase III categories into two segments – the Utility (or monopoly) segment and the Competitive segment. One key objective of the new regulatory framework is to gradually adopt regulatory forbearance for all services in the Competitive Segment on a market by market basis. The Utility Segment which includes all the facilities required by subscribers to gain access to the telecom networks, as well as the switching and transmission facilities deployed in defined local exchange areas, will continue to be regulated under conventional rate base/rate of return guidelines until the CRTC sets out an approved price cap approach to be effective 1 January 1998.²²

As a result of this revised regulatory approach, beginning in September, 1996, the presentation of results, now known as SRB results, will include only two categories the Utility and Competitive Segments reconciled to the company's financial statements.

10.0 Corporate Use of Results

During the formation of the Phase III conceptual framework, regulated company officials indicated that revenue/cost information by broad categories was not required for corporate purposes. That view changed in the following years. For instance, without regulatory prompting, Bell aligned its operating revenue accounts with the Phase III categories in 1988 and introduced a revised expense account structure in 1991 to facilitate the matching of revenues and costs and the development of contribution margins. Likewise, Maritime Telegraph and Telephone Company (MT&T), operating in the Province of Nova Scotia, had begun to develop its Profit Centre Reporting System before the Commission assumed jurisdiction over the company. Full implementation of MT&T's system designed to identify the bottom line contribution of defined product/service groupings through the separation of accounting costs and revenues was targeted for December 1991. In a similar fashion, New Brunswick Telephone Company (NB Tel), independent of any regulatory initiatives, developed its Management Information and Costing system in recognition that strategic management of services requires good financial information and standard company reporting processes were not service oriented.

Moreover, Bell reported in April, 1993 it was moving towards a contribution-based budget and management process with operating groups being given greater autonomy and responsibility. This environment was described as being "as close to a profit centre concept as is possible within the overall Bell Canada structure".²³ Bell indicated that the creation of the process did not require any changes in the way of field, function and account codes for Phase III purposes and therefore would neither enhance nor detract from the company's ability to identify Phase III causal costs. MT&T reported that its reporting system had already helped managers to better target their operational and market initiatives and benefits had been realised through asset and inventory reductions, more focused product lines, improved cost control and improved billing and collections. Indeed, this growing corporate demand for supplementary accounting information that links revenues and costs with business segments has been discussed for more than ten years in the academic and trade literature (see Cokins, *et al.* 1993, Cooper, *et al.* 1996, Johnson & Kaplan 1987). While the categories or segments required for regulatory versus corporate purposes may differ, the need for disaggregated activity-based accounting information is now being driven by more than regulatory cross-subsidisation concerns. This is important for efficiency and profitability.

11.0 Costing Results in the Emerging Competitive Era

11.1 Facing Concerns Regarding the Creditability of Phase III Results

Decision 92-12 marked the opening of the Canadian domestic long distance market to alternative suppliers. At the same time, the CRTC implemented an approach to identify contribution charges payable by the entrants to the incumbent carriers reflecting the long-standing rate structures which generated sizeable net revenue surpluses from the provision of long distance services instead of charging end-users directly for the costs of the facilities required to gain access to the local and long distance networks. Phase III results played a vital role in quantifying the revenue shortfall to which the entrants into the Canadian long distance market must make a proportionate contribution.

That being the case, it is not surprising that along with conventional competitive market initiatives, the entrants and, in particular, Unitel (the second network operator) began to take issue with the Phase III results. Unitel argued that misallocations of costs between the Access and Monopoly Local versus the Competitive Toll category were resulting in an overstatement of its required contribution payments by some 38 percent. These allegations were discussed at length during the regulatory framework proceeding which led to Decision 94-19 in September, 1994. However, well before that proceeding was concluded, the Commission launched in March, 1994 a focused review of specific Phase III revenue and cost assignment procedures. The Inquiry Officer's Report was submitted to the Commission in September, 1994 and with minor revisions the recommendations in that Report were accepted by the CRTC in Decision 94-24.

Some modifications to existing Phase III assignment processes resulted from this focused review although there was no substantiated evidence of the serious misallocations alleged by Unitel at the outset of the proceeding. The most significant amendment was with respect to the Access Category definition. The Inquiry Officer concluded that this definition needed to reflect a more functional market-based approach and thus the costs of local switching, whether traffic-sensitive or not were to be assigned to the Monopoly Local category rather than the Access category. It was argued that this revised definition would fit the emerging market conditions with firms providing various unbundled combinations of loops and local switching facilities.

However, late in 1994, Unitel continued to call into question the credibility of the Phase III results resubmitting exhibits that displayed the US company AT&T long distance costs at 19.5 Canadian cents per minute compared to Bell at of 9.5 cents based on its Phase III results. Once again, Unitel alleged that Canadian long distance costs were considerably understated because of inappropriate Phase III assignments.

This benchmarking of Canadian versus United States long distance costs had been put in evidence during the proceeding leading to Decision 94-19 and the Commission had suggested that properly documented and tested evidence might be considered in future proceedings. Indeed, submissions late in 1994 to the Canadian Cabinet by Unitel and others prompted the Government to direct the Commission, through Order-in-Council 1994-2036, to compare Phase III allocations with external benchmarks. The matter was taken up in the proceeding that led to Decision 95-21.

As the revised evidence was submitted the alleged gap of 10 cents per minute between Canada and US long distance costs was sharply reduced. Unitel's final estimate for AT&T-C was 9.9 Canadian cents per minute compared to Bell at 7.0. Stentor's final estimate for AT&T was 12.7, versus Bell at 13.2 Canadian cents per minute.²⁵ The Commission considered detailed evidence on a number of matters aiming to achieve the most meaningful comparison between Canadian and US long distance costs. The Commission adjusted Unitel's estimate of AT&T long distance costs to 13.4 cents per minute compared to Bell's 1993 Phase III long distance costs at 11.3 cents. Therefore, the decision concluded that the difference between Bell's Phase III long distance costs and comparable AT&T costs was approximately 1.0 to 2.0 cents per minute. The Commission concluded this benchmarking analysis, contrary to the allegations of Unitel and others, provided evidence that the existing Phase III assignment methods result in a reasonable allocation of costs between the Utility and Competitive segments. Accordingly, the

Commission saw no requirement for any reduction in contribution rates based on such long distance cost comparisons.

Ironically, simultaneous to these efforts to call into question the Phase III cost assignment methods, and consequent results, the same results in the very same proceedings (i.e. Decisions 94-19 and 95-21) were providing the foundational methods and data to establish a new regulatory framework based on a two-way split rate base.

12.0 Facing New Versions of the Cross-Subsidisation Concern

An important issue emerging is how a regulatory agency will be able to ensure that the costs incurred in the anticipated deployment of broadband capable facilities are borne by subscribers willing to pay for the services provided over such facilities. This matter was addressed for the first time in some depth in Decision 95-21. The Commission had noted that Stentor is planning to make a substantial investment in broadband infrastructure, and stated that it must be satisfied that any capital investment in such facilities that forms part of the Utility Segment be justified and be recovered in an appropriate manner. In its Decision 95-21, the Commission stated that subscribers must be protected from bearing the risk associated with the telephone companies' new broadband investment; otherwise, the Utility segment investment base could be inflated resulting in unjustified upward pressure on local telephone rates.

The Commission found, that in general, the most appropriate regulatory treatment for broadband initiatives is to require the telephone companies to assign to the Competitive segment all new investment and related expenses incurred after 31 December 1994 associated with the deployment of fibre, coaxial cable, opto-electrical equipment, asynchronous transfer mode (ATM) switches, and video servers.

The Commission considered that circumstances where fibre is the most efficient and cost effective serving technology for the provision of Utility segment services, such fibre will apply only to feeder cable, host-remote links, and the inter-office trunk network facilities used to provide Utility segment services within an exchange. Further, the Commission did not foresee any instances where it would be appropriate to have fibre or coaxial cables in the distribution portion of the loop assigned to the Utility segment.

The Commission concluded that the regulatory treatment for broadband investment set out in Decision 95-21 ensured that Utility segment subscribers did not bear the risk associated with new broadband investment. In particular, it ensured that unused capacity, which may only subsequently become useful for the provision of new broadband services, is not merely warehoused in the Utility segment. Implementation of this treatment of broadband facilities in the context of the Phase III costing procedures has already become a rather protracted regulatory process. Once again, it is evidenced that costing is never a settled matter. The long-standing concern of public regulators to protect the subscribers of plain ordinary telephone service (POTS) from being the unwitting financial contributors to the bandwagon of new broadband information society services is very much a live issue.

13.0 Lessons To Be Drawn

What does this Canadian story of telecom costing tell us which may be of relevance to countries with relatively new regulatory regimes which must regulate in an environment that anticipates and, in many cases, encourages competitive entry into telecom markets?

First, it must be noted that Canada's Phase III service costing approach had been put in place both conceptually and operationally well before the doors were opened to competitive suppliers in the domestic long distance market. As a result, Phase III results were available, and indeed have played a vital role in setting the contribution charges for the new entrants, as well as providing a framework for the revised regulatory split rate base approach. Those countries which are now creating or reforming regulatory institutions and often, coincidentally, opening telecom markets to competition may wish to consider that service costing information along the lines of the CRTC Phase III studies can be an extremely beneficial tool of regulation, particularly in the transition to more competitive markets.

Second, the Canadian experience with telecom costing suggests that it is important to have both sound forward-looking cost studies (i.e. Phase II) to support the introduction of specific services and annual historical revenue/cost results (i.e. Phase III) that act broadly to track the actual market results of categories of services. In combination, these results assist a regulatory agency in one of its classic tasks, the identification and appropriate redress of any cross-subsidisation flows from subscribers under monopoly market conditions to those in competitive markets.

However, the Canadian experience also suggests that the issue of cross-subsidisation reshapes itself as more market segments are opened to competition. As market segments are declared effectively competitive the Canadian regulatory approach anticipates regulatory forbearance and consequently release from tariff submissions and the associated Phase II costing studies. Similarly, the new regulatory framework announced in Decision 94-19 requires carriers to submit broad category results for only two categories the Utility and Competitive segments – rather than the original set of Phase III categories. In fact, even the continued submission of these segment results is at issue in the Commission's recently announced proceeding to implement a price-cap regime for the Utility segment by 1 January 1998. The cross-subsidisation issue between these two segments may be taking on a different name as illustrated in the above discussion on how to identify and assign the costs of new facilities for future broadband services.

Thirdly, the Canadian experience with the development and use of category revenue/cost results indicates that the effort to document sound assignment methods is complex and requires considerable co-operation between the regulatory and company staff. Moreover, sound methods, along with the development of administrative means to audit results and update processes, do not remove the potential for sustained controversy over the meaning of the category results. Considerable regulatory resources can be consumed in dealing with these concerns, suggesting that in future a negotiation process may be worth considering. However, such negotiations will still require cost "boundaries" as reference points for negotiation.

Fourth, the Canadian experience illustrates that the mere existence of category costing information does not make the seemingly inexorable transition to cost-based pricing necessarily a smooth one. Competitive market structures and cost-based pricing tend to march together and the availability of category costing information does assist in framing the debates that emerge. While costing information does not resolve policy debates over the appropriate pricing of telecom services as competitive market structures

are promoted, such information does focus these debates on the size and direction of the required changes.

14.0 The Road Ahead for Costing

One may ask at this juncture what will be the next chapter in telecom costing in Canada. On the one hand, the Commission's revised regulatory framework with its split rate base has prompted a significant aggregation of the Phase III results required for regulatory purposes. On the other hand, the information requirements of the price cap approach has not been confirmed and depending on the eventual number of service baskets as well as the characteristics of price cap monitoring and review processes there may be a need to revisit revenue/cost relationships and therefore return to a more disaggregated set of results.

Many observers see price caps as an attractive alternative to conventional rate base/rate of return regulation which is regarded as both too ponderous and too time and resource intensive for the emerging competitive markets in telecom. But, there may be a continuing regulatory demand for cost information to address new versions of the cross-subsidisation issue. Put starkly, price cap regulation does not equip regulatory agencies to face certain issues such as the debate over the appropriate treatment and ongoing scrutiny of the roll-out of broadband information superhighway infrastructure investment. It may be, therefore, that the Phase III cost information for regulatory purposes will remain important for effective regulation even under price cap regimes.²⁴

Regardless of the regulatory requirements for costing, the corporate need for enriched costing information for specified market segments or services is increasingly driven by the emergence of competitive market arrangements and strategies. A growing literature on activity-based costing has been evident for more than ten years. Routinely the trade literature announces courses on how to implement corporate systems to determine the detailed costs of an enterprise's processes, in both the manufacturing and service sectors, with the intention to produce profitability results by product, service, activity, customer, market segment and more.²⁵

Indeed, as the quotations used in the introduction to this chapter suggest, the need to count the costs is generations old and all indications indicate this need remains with us. The effort to count costs and the purposes for which this effort is expended may change but the task with all its inherent conceptual controversies and operational difficulties will simply not go away. It is an essential tool for both good management and good regulation.

Endnotes

¹ The views expressed in this chapter are the author's and do not necessarily represent the official position of the Canadian Radio-television and Telecommunications Commission.

² Shakespeare, Henry IV, Part 2, Act iii.

³ St. Luke's Gospel, chapter 14, verse 28.

⁴ See Ryan (1993) for a detailed reference to Canadian telecom law and regulation update on a regular basis.

⁵ Since the 1930s these operators have functioned together in an organisation known as the Trans Canada Telephone System. But, as of January 29, 1992 the organisation's name and structure changed. It is now called Stentor Canadian Network Management, which continues to manage and monitor the telephone

companies' interprovincial networks and their North American interconnections. The organisation also administers the division of revenues from national services. On the same day, the telephone companies announced the creation of two jointly-held companies. The Stentor Resource Centre consolidates the telephone companies' research and development, and national and international marketing. Stentor Telecom Policy Inc., acts as a government relations advisory arm for the telephone companies.

⁶ This 1995 total of 21.8 billion CAD includes Stentor companies (14.1 billion CAD); independent telephone companies (1.3 billion CAD); recent entrants into the long-distance market (1.1 billion CAD); Teleglobe (0.5 billion CAD); Telesat (0.2 billion CAD); radio common carriers including cellular operators (2.0 billion CAD); resellers (0.2 billion CAD) and cable television operators (2.4 billion CAD).

⁷ Network Access Service (NAS) has replaced the former term "Main and Equivalent Main Telephones". In Stentor's annual publication "Statistics 1993 and 1994" the following definition is provided:

The definition of NAS, as adopted at the May 1984 Accounting Committee, for statistical reporting purposes, is as follows:

"A network access service provides primary connection to a company-owned network for the purpose of telecom, regardless of the physical characteristics of the link.

"This includes individual and party line circuits; trunks connecting company facilities with switching devices located on customers' premises; Centrex official services; coin licensed radiotelephones; primary connections within networks (i.e. drops); and primary special services circuits."

Note:

- NAS subscriber lines may terminate on company-owned/leased or CPE (Customer Provided Equipment) sets.
- It includes licensed radiotelephones capable of direct network access added to counts normally used for telephone station apparatus.

For Centrex PBX services, where the Centrex or PBX provides a Class-5 service and homes directly on a long distance switch, one count is included for each working line circuit. Where the Centrex or PBX homes directly on a Class-5 switch, one count is included for each trunk between the Centrex or PBX and the Class-5 switch.

⁸Unitel is the successor of CNCP Telecommunications a partnership established in 1908 by the two national railway systems, CNR and CPR, which had provided telegraph service for many decades with coast-to-coast service first available in 1886, followed by newswire service in 1917, radio program transmission by 1930 and TELEX service starting in 1956.

⁹ In recent years, former Crown-owned corporations have been sold to private industry (e.g. Teleglobe Canada Inc., Telesat Canada, ED TEL Inc., AGT Limited). Only Saskatchewan Telecommunications, Manitoba Telephone System and a few municipal telephone systems remain as publicly-owned telephone operations.

¹⁰ In this regard, the *Telecommunications Act* states in Part II, Section 16, subsection (1) and (3):

(1) A Canadian carrier is eligible to operate as a telecommunications common carrier if it is a Canadian-owned and controlled corporation incorporated or continued under the laws of Canada or a province.

(3) For the purposes of subsection (1), a corporation is Canadian-owned and controlled if:

- not less than eighty percent of the members of the board of directors of the corporation are individual Canadians;
- Canadians beneficially own, directly or indirectly, in the aggregate and otherwise than by way of security only, not less than eighty percent of the corporation's voting shares issued and outstanding; and,

-
- the corporation is not otherwise controlled by persons that are not Canadians.

¹¹ See *Alberta Government Telephones v. Canada (CRTC)*, [1989] 25.C.R. 2.25 and *Téléphone Guèvrement Inc. C. Québec* (Régie des télécommunications) (1992), 99 D.L.R. (4th) 241 (C.A.).

¹² SaskTel is the exception. It will become subject to the Act on a date to be fixed by the Governor in Council on or after the fifth anniversary of the Act's proclamation (i.e. October 25, 1998) or on such earlier dates to be fixed at the request of the Government of Saskatchewan.

¹³ Section 7 of the *Telecommunications Act* states the objectives of Canada's telecom policy to be:

1. to facilitate the orderly development throughout Canada of a telecommunications system that serves to safeguard, enrich and strengthen the social and economic fabric of Canada and its regions.
2. to enhance the efficiency and competitiveness, at the national and international levels, of Canadian in both urban and rural areas in all regions of Canada;
3. to enhance the efficiency and competitiveness, at the national and international levels, of Canadian telecommunications;
4. to promote the ownership and control of Canadian carriers by Canadians;
5. to promote the use of Canadian transmission facilities for telecommunications within Canada and between Canada and points outside Canada;
6. to foster increased reliance on market forces for the provision of telecommunications services and to ensure that regulation, where required, is efficient and effective;
7. to stimulate research and development in Canada in the field of telecommunications and to encourage innovation in the provision of telecommunications services;
8. to respond to the economic and social requirements of users of telecommunications services; and to contribute to the protection of the privacy of persons.

¹⁴ Saunders, Warford, Wellenius (1994) notes the Canadian experience, among others with application to developing economies.

¹⁵ The Canadian Transport Commission (CTC), predecessor to the CRTC, in a September, 1969 rate case decision stated: "It would be in the public interest for the Commission to investigate the feasibility of carrying out cost and revenue separations between regulated and unregulated services, and the method and procedures appropriate for determining such separations". Then, in announcing its decision to conduct this inquiry, the CTC stated: "The basic reason for the inquiry is that the Commission wishes to be apprised of the most efficient methods or techniques of accounting and costing that might feasibly be uniformly applied by telecommunications carriers under its jurisdiction. The committee would then be in a better position to determine whether or not tolls, filed with it as tariffs of the carriers, meet with the provisions of Section 321 of *The Railway Act*." (i.e. standard regulatory requirements that rates be set at "just and reasonable" levels and that there be no "undue discrimination" embodied in the rate structures).

¹⁶ The Phase III conceptual framework was initially spelled out in by Mr. K.L. Wyman in Report of the Inquiry Officer with respect to the Inquiry into Telecommunications Carriers' Costing and Accounting Procedures: Phase III – Costing of Existing Services, 30 April 1984 and then confirmed by the CRTC in Decision 85-10.

¹⁷ For instance, Bell's Phase III Manual contains approximately 2000 pages of documentation.

¹⁸ In a September, 1993 a report submitted to the Commission by Deloitte & Touche entitled "Report on the Controls in the Phase III Process" it was concluded that:

"The controls applied by the Commission are similar to, and in many respects are stronger than, the controls applied by the regulatory authorities in the United Kingdom, the United States, and Australia."

¹⁹ See Endnote no. 11.

²⁰ The author often heard comments prior to the regular submission of Phase III results which implied that a carrier would manipulate the Phase III procedures to avoid ever reporting revenue shortfalls. That view proved to be unwarranted and speaks well of both the credibility of the Phase III procedures and the integrity of the regulated companies submitting Phase III results.

²¹ This initial contribution calculation is set out in considerable detail in a three page attachment to Decision 92-12 but it should be noted that important modifications were made to this approach as set out in Decision 95-21 at pp. 72-81 and Attachment C.

²² The CRTC issued Price Cap Regulation and Related Issues, Telecom Public Notice CRTC 96-8, 12 March 1996.

²³ In response to Bell (CRTC) 22 March 93-1906 RR93 Bell described the basic parameters of this contribution-based budget and management process to be:

- “matching, for each business unit, revenues with the costs incurred and the assets deployed to earn them at the level where they are actionable and can be influenced by the business unit; and
- defining each business unit’s accountable contribution to the Corporate bottom-line, i.e., the accountable financial performance on which it will be measured and managed.

The overall strategy aims to put as many dollars as possible under the direct control and accountability of the business units, assigning to the business units costs that have traditionally been booked at the Corporate level only (e.g., pension and benefits loadings, payroll taxes, etc.) and introducing transfer pricing for those centrally provided corporate services which can and should be controlled by the users.

This new process will apply only to above-NOR (Net Operating Revenue) revenues and expenses.

Bell expected this management action would provide greater empowerment and accountability to the specific business units to:

- “provide better customer focus;
- increase efficiency, over time, of corporately provided services;
- better define and control Corporate support costs;
- provide better understanding of the business units’ contribution to the Company’s overall profitability.”

²⁴ See Trebing (1989) further discussion of how costing information may be needed by regulatory authorities despite the emergence of competition.

²⁵ See, for instance, seminars on activity-based management systems offered by the Canadian Management Centre of American Management Association International in Toronto, Ontario and by York University in North York, Ontario.