Canadian Radio-television and Telecommunications Commission
Conseil de la radiodiffusion et des télécommunications canadiennes

Telecom Public Notice CRTC 2007-4

Ottawa, 30 March 2007

Review of certain Phase II costing issues

Reference: 8652-C12-200704636

In this Public Notice, the Commission initiates a proceeding to review certain Phase II costing issues.

Background

1. In *Inquiry into Telecommunications Carriers' Costing and Accounting Procedures – Phase II: Information Requirements for New Service Tariff Filings*, Telecom Decision CRTC 79-16, 28 August 1979 (Decision 79-16), the Commission set out costing directives, including the key principles and the basic approach to costing new telecommunications services based on prospective incremental costs, commonly referred to as Phase II costing. As a result of Decision 79-16, the incumbent local exchange carriers (ILECs) subject to Commission regulation at the time filed Phase II costing manuals to be applied in the preparation of their economic studies for telecommunication services. Subsequent to Decision 79-16, the requirement to file and apply a Phase II costing manual was extended to other ILECs that became subject to the Commission's jurisdiction.

2. Since Decision 79-16, various modifications have been made to the Phase II costing methodology directives, some of which have been the subject of disagreement by, and between, ILECs.

3. In addition, Phase II costing has been applied by Cogeco Cable Inc. (Cogeco), Rogers Communications Inc. (RCI), Shaw Cablesystems G.P. (Shaw), and Videotron Ltd. (Videotron) (the cable companies) with respect to their third-party Internet access service, consistent with *Regulation under the Telecommunications Act of cable carriers' access services*, Telecom Decision CRTC 99-8, 6 July 1999.

Phase II cost review

4. The Commission hereby initiates a proceeding to review certain Phase II costing issues with respect to Bell Aliant Regional Communications, Limited Partnership (Bell Aliant),[1] Bell Canada, MTS Allstream Inc. (MTS Allstream), Saskatchewan Telecommunications (SaskTel), TELUS Communications Company (TCC), and Société en commandite Télébec (Télébec) (the major ILECs), and the cable companies. For the purposes of this proceeding, the major ILECs and the cable companies are referred to collectively as "the companies" and individually as "the company."

[1] On 7 July 2006, Bell Canada's regional wireline telecommunications operations in Ontario and Quebec were combined with, among other things, the wireline telecommunications operations of Aliant Telecom Inc., Société en commandite Télébec, and NorthernTel, Limited Partnership to form Bell Aliant Regional Communications, Limited Partnership.

Scope of the proceeding

5. In order to ensure the timely completion of the proceeding, the issues to be considered will be limited to the following:

    a) What specific expense inclusions should be reflected in each company's regulatory economic study, and whether the expenses should be clearly and consistently defined across the companies with respect to:

        i) direct/indirect expenses;

        ii) portfolio expenses; and

        iii) variable common costs (VCCs).

    b) Whether plant lives should be updated, and if so, what updated plant lives should be used.

6. The above issues are more fully described in Attachments 1 and 2, respectively, consisting of:

    a) background;

    b) statement of the issue(s); and

    c) specific matters to be addressed in position papers, with detailed supporting rationale, consistent with a prospective incremental costing approach.

7. The position papers referred to in Attachment 1 are to be submitted by the major ILECs only, while the position papers referred to in Attachment 2 are to be submitted by the companies.

8. In order to assist parties, the Commission has prepared Attachment 3, a draft Regulatory Economic Studies Manual (the draft Manual), that identifies the basic costing methodologies and procedures/directives currently applicable to the major ILECs. It is intended that the companies will issue this Manual, which will include the company-specific Appendices G to Z referred to in Attachment 3, to reflect the determinations made by the Commission in this proceeding.

9. The Commission considers that the draft Manual will apply to the cable companies with the following exceptions:

    a) costing procedures for imputation tests for the incumbent company's retail services outlined in Section 2.1;

    b) costing procedures for regulatory economic studies to calculate the total subsidy requirements outlined in Section 2.3; and

c) current classification of Category I and II competitor services, and the current methodology requirements for Category I competitor services outlined in Section 2.2.1.

10. The cable companies may suggest different mandated Cost of Equity and Debt Ratio, rather than those outlined in paragraph 2-21 (d) of the draft Manual, with detailed supporting rationale.

11. Parties are to file as much information as possible on the public record. Any party that considers it necessary to assert a confidentiality claim must file detailed and specific reasons on the public record to support such a claim, and serve an abridged version of the information, redacted as little as possible, on the public record, or detailed and specific reasons for objecting to filing an abridged version.

Procedures

12. The companies are made parties to this proceeding.

13. Other persons interested in participating in this proceeding (including receiving copies of all submissions) must notify the Commission of their intention to do so by filling out the online form, or by writing to the Secretary General, CRTC, Ottawa, Ontario, K1A 0N2, or by faxing at: (819) 994-0218; by **13 April 2007** (the registration date). Parties are to provide their email address, where available. If parties do not have access to the Internet, they are to indicate in their notice whether they wish to receive disk versions of hard-copy filings.

14. The Commission will issue on its website, as soon as possible after the registration date, a complete list of interested parties and their mailing addresses (including email addresses if available) identifying those parties who wish to receive disk versions.

15. Position papers addressing the issues identified in Attachments 1 and 2 are to be filed with the Commission and served on other parties by the major ILECs and the companies, respectively, by **27 April 2007**.

16. The cable companies may file with the Commission, serving other parties, position papers addressing the issue identified in paragraph 10 above by **27 April 2007**.

17. Parties may address interrogatories to any party who filed position papers pursuant to paragraphs 15 and 16. Any such interrogatories must be filed with the Commission and served on the relevant party or parties by **25 May 2007**.

18. Responses to interrogatories addressed pursuant to paragraph 17 are to be filed with the Commission and served on all parties by **22 June 2007**.

19. Requests by parties for further responses to their interrogatories, specifying in each case why a further response is both relevant and necessary, and requests for public disclosure of information for which confidentiality has been claimed, setting out in each case the reasons for disclosure, must be filed with the Commission and served on the relevant party or parties by **6 July 2007**.

20. Written responses to requests for further responses to interrogatories and for public disclosure must be filed with the Commission and served on the party or parties making the request by **13 July 2007**.

21. A determination will be issued with respect to requests for further information and public disclosure as soon as possible. Any information to be provided pursuant to that determination will be filed with the Commission and served on all interested parties by **3 August 2007**.

22. If the Commission considers it necessary to address additional interrogatories to any company that filed position papers and/or submissions pursuant to paragraphs 15 and 16, respectively, it will issue such interrogatories by **10 August 2007**.

23. Responses to interrogatories addressed pursuant to paragraph 22 are to be filed with the Commission and served on all parties by **7 September 2007**.

24. All parties may file comments with the Commission, serving a copy on all other parties, by **28 September 2007**.

25. All parties may file reply comments with the Commission, serving a copy on all other parties, by **12 October 2007**.

26. The Commission expects to issue a decision on the issues raised in this Public Notice within 120 days after the record closes.

27. Where a document is to be filed or served by a specific date, the document must be actually received, not merely sent, by that date.

28. Parties may file their submissions electronically or on paper. Submissions longer than five pages should include a summary.

29. Electronic submissions should be in HTML format. As an alternative, those making submissions may use "Microsoft Word" for text and "Microsoft Excel" for spreadsheets.

30. Each paragraph of all submissions should be numbered. In addition, the line ***End of document*** should be entered following the last paragraph. This will help the Commission verify that the document has not been damaged during electronic transmission.

31. The Commission also encourages parties to monitor the record of this proceeding (and/or the Commission's website) for additional information that they may find useful when preparing their submissions.

Important notice

32. Note that all information that you provide as part of this public process, except information granted confidentiality, whether sent by postal mail, facsimile, email or through the Commission's website at www.crtc.gc.ca, becomes part of a publicly accessible file and will be posted on the Commission's website. This information includes your personal information, such as your full name, email address, postal/street address, telephone and facsimile number(s), and any other personal information you provide.

33. The information you provide to the Commission as part of this public process is entered into an unsearchable database dedicated to this specific public process. This database is accessible only from the webpage of this particular public process. As a result, a general search of our website with the help of either our own search engine or a third-party search engine will not provide access to the information which was provided as part of this public process.

34. Documents received electronically or otherwise will be posted on the Commission's website in their entirety exactly as you send them, including any personal information contained therein, in the official language and format in which they are received. Documents not received electronically will be available in PDF format.

35. The personal information you provide will be used and may be disclosed for the purpose for which the information was obtained or compiled by the Commission, or for a use consistent with that purpose.

Location of CRTC offices

36. Submissions may be examined or will be made available promptly upon request at the Commission offices during normal business hours:

Toll-free telephone: 1-877-249-2782
Toll-free TDD: 1-877-909-2782

Central Building
Les Terrasses de la Chaudière
1 Promenade du Portage, Room 206
Gatineau, Quebec J8X 4B1
Tel: 819-997-2429
Fax: 819-994-0218

Metropolitan Place
99 Wyse Road, Suite 1410
Dartmouth, Nova Scotia B3A 4S5
Tel: 902-426-7997
Fax: 902-426-2721

205 Viger Avenue West, Suite 504
Montréal, Quebec H2Z 1G2
Tel: 514-283-6607

55 St. Clair Avenue East, Suite 624
Toronto, Ontario M4T 1M2
Tel: 416-952-9096

Kensington Building
275 Portage Avenue, Suite 1810
Winnipeg, Manitoba R3B 2B3
Tel: 204-983-6306 – TDD: 204-983-8274
Fax: 204-983-6317

Cornwall Professional Building
2125 – 11th Avenue, Suite 103
Regina, Saskatchewan S4P 3X3
Tel: 306-780-3422

10405 Jasper Avenue, Suite 520
Edmonton, Alberta T5J 3N4
Tel: 780-495-3224

580 Hornby Street, Suite 530
Vancouver, British Columbia V6C 3B6
Tel: 604-666-2111 – TDD: 604-666-0778
Fax: 604-666-8322

Secretary General

What specific expense inclusions should be reflected in each company's regulatory economic study, and whether the expenses should be clearly and consistently defined across the companies with respect to: (i) direct/indirect expenses; (ii) portfolio expenses; and (iii) variable common costs (VCCs)

i) Direct/indirect expenses

Background

1. As discussed in sections 3.4.3.6, Labour Unit Costs, and 3.4.3.7, Corporate Average Operating Expense (OE) Unit Costs, of the draft Manual in Attachment 3, direct/indirect expense cash flows are typically estimated by either applying a labour unit cost (LUC) to a time estimate for completing an activity/function or applying an operating expense (OE) unit cost to the appropriate cost driver for the activity/function.

2. Direct expenses associated with LUCs and OE unit costs include expenses associated with activities/functions such as direct salary/wages, benefits, training, and vehicle expenses of the personnel performing the function/activity, as well as the associated supervision, clerical, and other support expenses.

3. Indirect expenses associated with LUCs and OE unit costs include expenses such as minor tools, general furniture and office equipment, official telephone service, information services, information technology, and computer and support.

4. Direct and indirect expenses included in LUCs and OE unit costs contain slight variations across the major incumbent local exchange carriers (ILECs).

Issue

5. Which direct and indirect expenses should be included in LUCs and OE unit costs, and whether such inclusions should be applied consistently across the companies.

Specific matters to be addressed with detailed supporting rationale

a) List and describe in detail the individual direct and indirect expenses that are included in each of the LUCs and OE unit costs.

b) Indicate whether the inclusion of direct/indirect expenses in LUCs and OE unit costs should be applied consistently across the companies; if yes, identify which direct and indirect expenses should be included across companies; if not, identify and explain which direct and indirect expenses should not be included.

c) Describe in detail the methodology used to develop each of the LUCs and OE unit costs with respect to estimating direct and indirect expenses in regulatory economic studies.

d) Justify the methodology described in response to part c) above regarding the use of OE unit costs to estimate service-specific prospective incremental direct and indirect expenses.

ii) Portfolio expenses

Background

6. In the proceeding that led to *TELUS Communications Inc. – Application to review and vary Decision 2000-745 and Decision 2001-238*, Telecom Decision CRTC 2002-67, 25 October 2002,

   a) TELUS Communications Company (TCC) indicated that it allocated portfolio expenses among the relevant services and had included these expenses in its Phase II cost studies for individual services; and

   b) Bell Aliant Regional Communications, Limited Partnership (Bell Aliant), Bell Canada, and MTS Allstream Inc. (MTS Allstream) submitted that portfolio expenses are not causal to the specific service, and had not included them in their Phase II cost studies.

7. In *Primary inter-exchange carrier processing charges review*, Telecom Decision CRTC 2004-72, 9 November 2004 (Decision 2004-72), the Commission determined that portfolio expenses directly related to the development and management of marketing/promotional/sales programs associated with a common group of retail and/or competitor services, which could not be attributed (as direct/indirect expenses) to any specific service within that group, would vary as a result of these services, and should be reflected in each ILEC's cost study.

8. In Decision 2004-72, the Commission adjusted the expenses proposed by Bell Aliant, Bell Canada, MTS Allstream, and Saskatchewan Telecommunications (SaskTel) to include portfolio expenses by applying the following portfolio loading factors:

   a) 3.6 percent for Bell Aliant and Bell Canada;

   b) 1.78 percent for MTS Allstream; and

   c) 8.25 percent for SaskTel.

   In that Decision, the Commission did not adjust the expenses proposed by TCC, noting that TCC had already included portfolio expenses as part of its direct/indirect expenses.

9. Under TCC's current approach, three levels of portfolio expenses are identified: portfolio, category, and wireline. The types of activities at each level are as follows:

a) at the portfolio level: portfolio product management, facility rental and settlements, maintenance and provisioning, and other;

b) at the category level: market management, network operations, and other; and

c) at the wireline level: network operations, information technology, and strategic business unit common.

10. In response to Commission interrogatories dated 14 November 2003 regarding general Phase II costing information requirements, TCC provided an estimate of its total portfolio expenses expressed as a percentage of its direct/indirect expenses, equal to 48.65 percent.

Issue

11. How portfolio expenses should be defined, which specific portfolio expenses should be included in regulatory economic studies, and whether such inclusions should be consistently applied across the companies.

Specific matters to be addressed with detailed supporting rationale

a) The proposed definition of a portfolio expense.

b) Identification of all the different portfolio expenses that would be captured in response to part a) above.

c) With respect to the portfolio expenses identified in the response to part b) above, which if any of the expenses should be included in regulatory economic studies, and if so how they should be included. If it is considered that some expenses should be excluded, provide justification with respect to each expense.

d) Whether the same definition of portfolio expenses should be applied consistently for use in regulatory economic studies; if yes, what definition should be used; if not, explain why not.

e) Justify the proposed methodology to be used to develop portfolio expenses for use in regulatory economic studies.

f) Provide 2005 (or 2006, if available) operating expenses broken down into

i) direct/indirect expenses;

ii) portfolio expenses;

iii) VCC expenses; and

iv) fixed common expenses,

by activity, function, or cost centre, as applicable; specify the source of data used to develop these expenses.

g) In addition, provide 2005 (or 2006, if available) operating expenses broken down on a percentage basis as defined below:

i) percent direct/indirect expenses (i.e. direct/indirect expenses divided by the total operating expenses and multiplied by 100);

ii) percent portfolio expenses (i.e. portfolio expenses divided by the total operating expenses and multiplied by 100); and

iii) percent VCC (i.e. VCC expenses divided by the total operating expenses and multiplied by 100).

iii) VCCs

Background

12. In accordance with *Inquiry into Telecommunications Carriers' Costing and Accounting Procedures – Phase II: Information Requirements for New Service Tariff Filings*, Telecom Decision CRTC 79-16, 28 August 1979 (Decision 79-16) directives, the methods and procedures to estimate and include VCC expenses in regulatory economic studies have been documented in Phase II costing manuals. Among other things, each manual indicates that VCC expenses are included through the application of the VCC factor to comply with Decision 79-16.

13. In directive 4.4 of Decision 79-16, the Commission defined variable common resources to consist of all those remaining resources (other than direct/indirect) where the quantities of or payments for the resources are variable with the scale of operations of which the service represents a portion. Such costs would therefore include proportions of the variable costs of all operations involved in providing the service not picked up as direct or indirect costs.

14. In its most recent Phase II costing manual dated 28 January 2005, Bell Canada submitted that the VCC expenses as defined in its earlier 1986 Procedures Manual should be excluded from future studies, and that the expenses that its VCC factor sought to capture are now embedded in the company's demand-driven and service-driven expenses that are taken from its activity-based costing system. Bell Canada has further submitted that applying a VCC factor would have the effect of double-counting VCC expenses in the study to the extent that VCC expenses would already be included through the company's demand-driven or service-driven costs.

15. Certain ILECs classify expenses such as security services, corporate communications, and public relations as VCC expenses while other ILECs classify these expenses as fixed common costs.

Issue

16. Which expenses should be considered as VCC expenses and included in regulatory economic studies, and whether the VCC expenses should be clearly and consistently defined across the companies.

Specific matters to be addressed with detailed supporting rationale

a) List and describe all expenses that are classified as VCC with supporting rationale, along with a description of each VCC expense.

b) Indicate whether the inclusion of VCC expenses should be applied consistently across companies; if yes, identify which VCC expenses should be included across companies; if not, identify and explain which VCC expenses should not be included.

c) Describe in detail the methodology used to estimate VCC expenses in regulatory economic studies.

Whether plant lives should be updated, and if so, what updated plant lives should be used

Background

1. Plant lives represent the duration over which plant, property, or equipment is expected to provide service in an economic study. Plant lives are important cost elements as they determine the period over which the related capital expenditures are amortized.

2. Accounting plant lives are important cost elements as they determine the period over which a pool of related capital expenditures are amortized for accounting purposes. Economic lives may differ from their corresponding accounting lives as they relate to a specific asset rather than a pool of assets. The Commission notes that there is a common conceptual basis in economic lives and accounting lives in that they both reflect estimates of assets' physical lives, along with adjustments to reflect the impact of obsolescence and technology substitution.

3. In the development of capital costs for use in regulatory economic studies, accounting plant lives must be applied as the measure of economic life for those capital asset classes identified in Attachment B – Depreciation Life Characteristics Effective 1 January 1998 of *Implementation of price cap regulation and related issues*, Telecom Decision CRTC 98-2, 5 March 1998, as amended by Telecom Decision CRTC 98-2-1, 20 March 1998 (Decision 98-2). Since then, some ILECs have proposed to use revised plant lives in regulatory economic studies.

Issues

4. Whether or not it is appropriate to continue to apply the Decision 98-2 accounting plant lives for the ILECs' regulatory economic studies; if not, for each ILEC, what plant lives for each asset class should be used in regulatory economic studies. Further, for each cable company, what plant lives should be used in their regulatory economic studies.

5. What process should apply with respect to proposed future updates to each company's plant lives.

Specific matters to be addressed with detailed supporting rationale

With respect to each company:

a) Proposed basis for determination of plant lives for each asset class to be used in regulatory economic studies.

b) Proposed values of plant lives for each asset class.

c) Each asset class is to include a list of the various assets and,

   i) for each ILEC, a comparison of the current approved plant lives (identifying the Commission decision that approved such lives) and the proposed plant lives;

ii) for each cable company, a comparison of the currently used plant lives (including the plant lives reflected in the rates approved in *Cogeco, Rogers, Shaw, and Videotron – Third-party Internet access service rates*, Telecom Decision CRTC 2006-77, 21 December 2006, for asset classes filed in that proceeding) and the proposed plant lives.

d) What process should apply with respect to proposed future updates to each company's plant lives.

Attachment 3

DRAFT

REGULATORY ECONOMIC STUDIES

MANUAL

March 2007

Table of contents

Table of contents

1.0 INTRODUCTION

1-1 This document is the procedures manual for performing regulatory economic studies. Such studies are performed to meet the regulatory requirements imposed by the Commission, for example, in support of tariff filings for service introduction, service enhancement, and price reduction.

1-2 These regulatory economic studies are developed in accordance with generally accepted economic concepts and methods and incorporate the Phase II costing principles and methodology set out in Decision 79-16,[1] as amended in subsequent Commission or Commission staff determinations[2] described in this manual. These regulatory economic studies may also be referred to as Phase II studies and the economic costs of a given service determined in these studies may also be referred to as that service's Phase II costs or price/cost floor.

1.1 Purpose of the Manual

1-3 The manual describes a basic framework for conducting regulatory economic studies and addresses the following: basic principles; types of regulatory economic studies; demand and revenue estimation; expense and capital expenditure estimation; economic evaluators; presentation of results; and manual update requirements.

1.2 Basic Principles

1-4 The basic principles discussed in this section are principles that are applied when an economic study is performed in support of regulatory filings.

1.2.1 The Principle of Causality and Prospective Incremental Costing

1-5 An economic study compares the costs and revenues of undertaking a proposed course of action with those of a situation in which the proposed course of action is not taken. Accordingly, an economic study includes all the components of cost and revenue that would be different if that course of action were undertaken. These cost and revenue components are then compared with the costs and revenues that would occur if the course of action were not undertaken. The difference in the cost and revenue components is said to be "causal" to that course of action; that is, the difference is caused by the course of action. Also, since the differences measure the incremental effects on costs and revenues caused by undertaking the course of action, they are also referred to as "incremental."

1-6 Costs that remain the same whether or not the relevant course of action is undertaken are not causal to the course of action and therefore do not affect the study results. Since costs and revenues that have been realized prior to the start of the course of action cannot be affected by that course of action, economic studies do not consider such cost and revenue components. Historical or sunk costs are an example of this type of cost because no action after a decision point can affect costs already incurred prior to that decision point.

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[1] *Inquiry into Telecommunications Carriers' Costing and Accounting Procedures – Phase II: Information Requirements for New Service Tariff Filings*, Telecom Decision CRTC 79-16, 28 August 1979 (Decision 79-16).

[2] The Commission notes that this draft manual does not include references to its determinations that address the disposition of specific costs as distinct from cost inputs that are intended to be reflected in future cost studies in support of tariff applications.

1-7 Consequently, the approach undertaken in economic studies is both incremental and prospective (i.e. forward-looking) in nature. In this manual, the term "prospective incremental costing" is used synonymously with the term "causal costing."

1-8 The revenues causally related to a proposed course of action (e.g. the introduction of a new service) in any future year consist of the total revenues in the year if the proposed course of action were undertaken minus the total revenues if the proposed course of action were not undertaken. Similarly, the causally related costs of a proposed course of action in any future year are the total costs in the year if the proposed course of action were undertaken minus the total costs if the proposed course of action were not undertaken.

1-9 Causally related revenues and costs are estimated for each year of an economic study. In order for revenues and costs occurring in different years to be comparable, they are discounted to a common point in time. The discount rate used to express cash flows to a common point in time is discussed below.

1-10 An economic study compares the course of action being studied (the alternate plan) to a situation in which that course of action is not followed (the reference plan). For a new product, service, or service feature, the alternate plan is typically "to introduce" a new product/service/service feature and the reference plan is "not to introduce" a new product/service/service feature.

1-11 The reference plan represents the course of action that the company would follow if the alternate plan were not implemented. Defined in this way, the reference plan and alternate plan are mutually exclusive courses of action. The main purpose of the reference plan is to provide a common base or reference point from which to measure the incremental effect of the alternate plan on the company.

1.2.2 Cash Flow Approach

1-12 Causally related revenues and costs are expressed in terms of cash flows in an economic study. A cash flow is defined as a flow of money either out of the company or into the company.

1-13 The six basic cash flows in an economic study are the following:

a) Capital Expenditures;

b) Gross Salvage;

c) Cost of Removal;

d) Revenue;

e) Expense; and

f) Income Tax Payable.[3]

[3] Small incumbent local exchange carriers that are tax exempt and crown corporations, for example Saskatchewan Telecommunications (SaskTel), do not pay income taxes and therefore will have no income tax payable cash flow.

1-14 Capital expenditure cash flows represent dollars associated with capital assets that are expected to generate future benefits for a period of more than one year. Since capital dollars are spent for property, plant, equipment, and land that last more than one year, each capital expenditure must be associated with an estimate of the useful life of the equipment, also known as the economic life of the equipment. For instance, if the study period is longer than the economic life, then the study must take into account the cost associated with replacing the equipment at some point over the study period. Conversely, if the economic life of the plant is longer than the study period, then the study must take into account the fact that the plant has value to the company beyond the study period. To take these facts into account, the retirement pattern, gross salvage value, and cost of removal associated with the equipment are required to fully characterize a capital expenditure.

1-15 The three types of capital-related cash flows are described as follows:

a) Capital Expenditures:

A capital expenditure is the cash outflow for the acquisition of a capital asset. This cash flow includes the cost of material and the related installation and engineering costs. Capital expenditures reflect the cost of growth technology, i.e., the technology the company will deploy on a going-forward basis. The development of capital cash flows is discussed in this manual.

b) Gross Salvage:

Gross salvage is the cash inflow at the time of retirement of the capital asset resulting from the disposition of the capital asset outside the company.

c) Cost of Removal:

Cost of removal is the outward cash flow for removing a capital asset at the end of its economic life.

1-16 The non-capital cash flows in an economic study are revenue, expense, and income tax payable.

a) Revenue:

Revenue represents the payments received from customers (both end-users and competitors) through, for instance, monthly rates and one-time service charges.

b) Expense:

Expense cash flows include a variety of cash outflows related to the cost of doing business, such as service provisioning, sales management, advertising, and maintenance. Corporate taxes and the revenue-percent charge[4] are also considered to be expenses. The development of expense cash flows, including taxes, is discussed in section 3.4.3 of this manual.

[4] The revenue-percent charge (which is also known as the Canadian telecommunications revenue subsidy charge) is a contribution charge that applies to the majority of the company's telecommunications services revenues.

c) Income Tax Payable:

The income tax payable cash flow in an economic study is the income tax to be paid by the company in a given year as a result of the cash flows generated by the project being studied.

1.2.3 Study Period

1-17 The study period is the period of time for which the causal revenue and cost cash flows will be estimated and analyzed to determine the economic impact of an alternate plan. Theoretically, the economic study period needs to encompass all the future years for which the present worth of cash flows in the alternate plan is expected to differ from that in the reference plan. However, it is sufficient that the study period be only as long as necessary to ensure that all the significant causal cash flows are reflected in the study. Typically, the study period will be between three and five years for economic studies. If a contract period is involved, then the study period will be equal to the contract period. Section 1.2.8 of the manual discusses the means of incorporating into the economic study capital-related costs and benefits that are causal to the proposal but occur beyond the end of the study period.

1.2.4 Time Value of Money

1-18 Since various investment proposals involve cash flows that occur in the future, the impact on the company will be spread over a span of time in the future. Due to the time value of money, dollars at one point in time cannot be compared directly with dollars at another point in time. For valid comparison and analysis, it is necessary to convert all cash flows from the time of occurrence to a common point in time.

1-19 The procedure for converting an amount of money at a given point in time to an economically equivalent amount at a different point in time is termed "discounting." The discount rate represents the time value of money. The company's current cost of capital, discussed below, is used as the discount rate for economic studies.

1.2.5 Cost of Capital

1-20 The cost of capital is a forward-looking estimate that represents the company's expectations of return on equity and debt. In a Commission staff letter dated 22 October 2004 regarding the use of an after-tax weighted average cost of capital (ATWACC) in Phase II cost studies,[5] Commission staff determined that it would be appropriate to adopt the ATWACC approach for determining present worth of costs in Phase II cost studies. In this manual, the terms "cost of money," "current cost of capital," "discount rate," and "ATWACC" are used synonymously with the general term "cost of capital."

1-21 The current cost of capital reflects the company's view of the foreseeable cost of capital, which is itself related to the company's capital structure.

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[5] Commission staff determination regarding a Part VII application by Bell Canada, Bell Aliant Regional Communications, Limited Partnership (Bell Aliant), MTS Allstream Inc. (MTS Allstream), and SaskTel dated 17 July 2002, seeking approval for the use of an ATWACC approach in Phase II studies (rather than the use of the before-tax cost of capital approach at that time).

1-22 Capital structure refers to the mix of different securities issued by a firm in order to finance the firm's assets. There are two basic categories into which the firm's capital can be classified: debt and equity. The debt ratio (r_d) is the ratio of debt to the value of total obligations comprising debt plus equity (where equity refers to common and preferred equity).

$$r_d = \text{debt}/(\text{debt} + \text{common equity} + \text{preferred equity})$$

1-23 The cost of debt used in economic studies represents the prospective cost of debt financing. The methodology used in estimating each company's prospective cost of debt is described in company-specific Appendix G.

1-24 For equity, there are two components – the cost of preferred equity and the cost of common equity, both of which are estimates of the foreseeable rate of return required by equity holders on their investment, that is, a target cost of equity.

1-25 The final factor to be considered when developing the cost of capital is the impact of corporate income taxes. For tax purposes, debt interest represents a deductible expense when calculating taxable income. Dividends, however, are paid from proceeds on an after-tax basis. The tax shield related to debt interest reduces the cost of debt compared to that of equity. An ATWACC is an average of the after-tax costs of debt and equity weighted by their respective proportions in the company's current market value capital structure, which is used as a proxy for the forward-looking market value.

1-26 In algebraic form, the relationship between the ATWACC and the costs of debt and equity is expressed by the following equation:

$$i = (i_d)(r_d)(1-t) + (i_e)(r_e) + (i_p)(r_p)$$

where:

i = ATWACC

i_d = cost of debt

i_e = cost of common equity

i_p = cost of preferred equity

r_d = debt ratio

r_e = common equity ratio = common equity/(debt + common equity + preferred equity)

r_p = preferred equity ratio = preferred equity/(debt + common equity + preferred equity)

t = corporate income tax rate

1.2.6 Discrete and Continuous Cash Flows

1-27 Cash flows are either discrete or continuous. Discrete cash flows are instantaneous lump sums of money. Continuous cash flows are uniformly distributed cash flows occurring throughout a specified time period. The majority of cash flows in the company's economic studies are treated as continuous. Recurring customer payments and most ongoing operating expenses are treated as continuous cash flows. Examples of cash flows that are generally treated as discrete are non-recurring investments in plant, or one-time payments for systems development and support.

1-28 Whether a cash flow is discrete or continuous will have an impact on the discounted value of the future cash flow stream.

1-29 Appendix A shows the time value formulae for both discrete and continuous cash flows.

1.2.7 Valuation of Existing Plant

1.2.7.1 Shared and Discrete Plant

1-30 Some types of plant are added (or removed) as units of demand making use of that plant vary. An example of this is a line card in the Line Concentrating Module (LCM) of a Digital Multiplex System (DMS)-100 switch. This is called discrete plant. Such plant is dedicated to a particular service or proposal.

1-31 In other cases, plant is shared and supplied in some standard multiple of demand. Facilities of this type are termed "lumpy." The capacity of the plant is typically shared by more than one service. The LCM itself is an example of this type of plant. Plant such as this is treated as a shared facility in an economic study. In contrast, lumpy facilities that are dedicated to the service under study are considered to be discrete.

1.2.7.2 Valuation of Existing Discrete Plant

1-32 The concept of fungibility is applied to the valuation of existing discrete facilities. An existing discrete facility is fungible if there is growth demand outside the project under study that will require this type of facility. Therefore, when plant is fungible, its use in a project will cause the purchase of an additional new facility for other company projects. Alternatively, not using it for the project in question will allow it to be used elsewhere, thus saving the purchase of a new facility.

1-33 The cost associated with the use of existing discrete plant that is fungible is therefore the cost of that plant new (when the company is still buying the same technology) or the cost of the latest equivalent plant new (when the company is buying a different technology). For discrete plant that is non-fungible, the prospective incremental impact on the company of using the plant may be the net book value (NBV) or the lost opportunity[6] of salvage value net of removal costs.[7]

1.2.7.3 Valuation of Existing Shared Plant

1-34 When a proposed course of action requires the use of existing shared facilities, the impact of using a portion of the capacity of the shared equipment for the proposal under study is included in the economic study. This is estimated by considering the effect that the additional demand for the facility will have on future facility relief requirements. The use of some of the capacity for the proposal under study means this capacity is no longer available for other uses that could have shared the facility, and this may cause the advancement of future relief of facilities. This effect is referred to as the cost of advancement.

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[6] The opportunity costing approach is a forward-looking (prospective) approach based on the next best alternative use concept; for example, using a resource for a particular service makes that resource unavailable for other uses. Opportunity cost represents the benefits that could be obtained by using the resource in the company's next best alternative.

[7] Accepted industry practice that recognizes the economic salvage value of non-fungible plant in certain instances (refer to paragraph 2-21 below).

1-35 To establish the cost of advancement, a considerable amount of data relating to demand for the plant, the amount of existing spare capacity, relief dates, and facility quantities required at relief for both the alternate and reference plans is required. Often, these data are not readily available and the company uses the capacity cost method as a means of estimating the cost of advancement. In basic terms, capacity costing first requires the unitization of the total installed cost of the shared facility over the appropriate capacity of that facility. This is discussed in more detail in Appendix B. The cash flow impact on a particular service using this shared equipment is then estimated by multiplying this unitized cost by the demand units of capacity required for that service.

1.2.8 End-of-Study (EOS) Value

1-36 When an economic study is performed, for reasons of practicality, a finite study period is defined. While the time horizon over which the proposal being evaluated is truncated, the costs and benefits causal to the proposal often continue into the future, beyond the end of the study period.

1-37 While an economic study captures the capital expenditures on plant, either through "cost new" or capacity costing, recognition also needs to be given to the fact that this plant continues to generate benefits to the company beyond the end of the study period. Accordingly, the EOS value reflects the remaining service potential associated with the plant beyond the end of the study period.

1-38 When the remaining service potential is estimated, the time value of money is taken into account to estimate the expected value of service in an asset. This method is known as the Discounted Service Potential (DSP) method. A more detailed discussion of the DSP method is provided in Appendix C. The EOS value is determined based on the DSP method, consistent with Decision 98-22.[8]

1.2.9 Cost Increase Factors and Productivity

1-39 Cost estimates for an economic study are usually developed in terms of current dollars. Therefore, it is necessary to ensure that cost estimates reflect expected cost changes due to inflation in subsequent years of the study period. This is accomplished by multiplying the cost estimate expressed in current dollars by the appropriate inflation factor so that the cost is expressed in current dollars for each subsequent year of the study period.

1-40 For capital cash flows, capital increase factors (CIFs) are developed by asset class and applied to the relevant capital cash flow. For expense cash flows, expense increase factors (EIFs) are developed by expense category and applied to the relevant expense cash flows. The development of each incumbent company's EIFs and CIFs is discussed in further detail in company-specific Appendix P.

1-41 In cases where the future cash flow is explicitly known (perhaps because it is a contracted amount) or where the anticipated cost change for a specific piece of equipment differs from the CIF for the asset class the equipment belongs to, the more accurate information is used in place of the general CIF or EIF.

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[8] Refer to paragraph 38 of *Final rates for unbundled local network components*, Telecom Decision CRTC 98-22, 30 November 1998, as amended by Telecom Decision CRTC 1998-22-1, 10 December 1998 (Decision 98-22).

1-42 In addition to inflation, an economic study also needs to reflect the impact of productivity changes over the study period in recognition of operational processes becoming more efficient over time. Productivity can be estimated explicitly or by using an average productivity factor, which can be applied to cash flows.

1-43 Where the company has information about the productivity associated with a particular cost element, this is the best measure of the appropriate level of productivity to incorporate in an economic study.

1-44 Where the company has insufficient information about the productivity associated with a particular cost element, the company may use a corporate average productivity factor based on its analysis of the unit cost changes over a period of years, net of inflation, for the company's regulated services. The productivity factor derived from this unit cost trend analysis is applied to both capital and expense cash flows in the economic study.

1-45 The methodology used to develop each incumbent company's productivity factor to be used in regulatory economic studies is described in company-specific Appendix P.

2.0 REGULATORY ECONOMIC STUDIES

2-1 Economic studies for a service are useful with respect to setting the price to be charged for that service. For instance, at the time of service introduction, an economic study can be performed to determine the minimum price that must be charged over a period of time (i.e. the study period) so that all the incremental costs associated with providing that service are recovered. In this case, the study examines the causal costs associated with offering the service and excludes any cross-effects[9] with other services.

2-2 In the case of regulatory economic studies performed for regulated services, in addition to the objectives discussed in the above paragraph, there is an objective to ensure that the incumbent company cannot gain a competitive advantage by virtue of the manner in which it determines costs for certain services that competitors must obtain from the incumbent (i.e. Category I competitor services[10]). The objective is met by requiring the incumbent company to impute in its economic studies the prices for such services, rather than their underlying costs. Consequently, the imputation tests[11] incorporate the tariffed rate for Category I competitor services that competitors must obtain from incumbents. The list of services for each incumbent company that must be imputed at the tariffed rate, as per Decision 2005-27,[12] is provided in company-specific Appendix R.

2-3 The application and methodology of the imputation tests were set out by the Commission in a number of concurrent decisions, as follows:

a) The Commission first introduced the imputation test in Decision 94-13.[13] The price floor mechanism set out in Decision 94-13 was applicable to interexchange voice services and required that, when proposing a new retail service or a price reduction for an existing retail service, the incumbent company would have to demonstrate that, in general, the proposed rate or rates for the service would be sufficient to recover the costs of the service, where those costs were defined as the Phase II costs of the service plus an imputed cost. In light of this latter component, the Decision 94-13 price floor mechanism was referred to as the "imputation test." The primary purpose of introducing the imputation test in Decision 94-13 was to guard against unjust pricing.

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[9] In accordance with Commission directives, cross-effects are excluded from regulatory economic studies provided in support of proposed tariffed services. Cross-effects are causally related cost and revenue impacts on other company services as a result of undertaking a given service proposal.

[10] Category I competitor services are defined to include services provided to competitors that are in the nature of essential services, and are set out in Appendix 1 of *Regulatory framework for second price cap period*, Telecom Decision CRTC 2002-34, 30 May 2002, as amended by Telecom Decision CRTC 2002-34-1, 15 July 2002 (Decision 2002-34).

[11] The regulatory economic studies that are filed with the Commission in support of tariff applications are referred to as "imputation tests."

[12] Refer to paragraphs 89 and 160 of *Review of price floor safeguards for retail tariffed services and related issues*, Telecom Decision CRTC 2005-27, 29 April 2005 (Decision 2005-27).

[13] *Review of regulatory framework – Targeted pricing, anti-competitive pricing and imputation test for telephone company toll filings*, Telecom Decision CRTC 94-13, 13 July 1994 (Decision 94-13).

b) In Decision 94-19,[14] the Commission modified the imputation test to reflect the implementation of the new carrier access tariff (CAT) and extended the application of the test to competitive network services and Type 1 customer-specific arrangements (CSAs).[15] Also, in Decision 94-19, the Commission extended and modified the imputation test to make it applicable to competitive network services, and modified the imputation test to require each incumbent company to impute CAT rates for its own use of its bottleneck services.

c) In Decision 97-8,[16] the Commission determined that the incumbent company's use of essential facilities and services should be imputed at tariffed rates, and that the test should apply on a band-specific basis.

d) In the Commission Letters dated 27 November 1998[17] and 5 January 2001,[18] the Commission set out the methodology to be used for imputation tests to be provided in support of tariff applications that proposed the introduction of a new local service, or implicit or explicit price decreases to an existing local service.

e) In Decision 2005-27, the Commission modified the existing pricing safeguards for regulated local services. In paragraph 89 of that Decision, the Commission required the incumbent company to impute, in its regulatory economic studies, the tariffed rates of Category I competitor services in place of the associated Phase II costs.

2-4 In certain simple tariff applications, for example where a service element is added to an existing service and all costs causal to the introduction of the service element vary with the service element demand, a resource cost study approach may be used as described in Appendix E.

2-5 The following section describes the types of economic studies performed for regulatory purposes and the associated Commission directives. The types of regulatory economic studies are as follows:

a) imputation tests for the incumbent company's regulated retail services; this test provides a price floor safeguard against anti-competitive pricing;

b) economic studies for competitor services; this study determines the cost floor for Category I competitor services and the price floor for Category II competitor services;[19] and

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[14] *Review of regulatory framework*, Telecom Decision CRTC 94-19, 16 September 1994 (Decision 94-19), Section IV, item B: Targeted Pricing, Anti-Competitive Pricing and the Imputation Test.

[15] In Decision 94-19, the Commission identified two general types of CSA tariffs: Type 1, providing, via a special facilities or special assembly tariff, a service that involves service features or technology that differ from those covered by the GT; and Type 2, providing a bundle of services tailored to a particular customer's needs, primarily involving elements available from the GT, where the purpose is to customize the offering in terms of rate structure or levels (for example, distance sensitive/insensitive, usage sensitive/insensitive, one-time charges, etc.).

[16] *Local competition*, Telecom Decision CRTC 97-8, 1 May 1997 (Decision 97-8).

[17] Commission Letter dated 27 November 1998 regarding the imputation test methodology for local services applicable to Bell Aliant, Bell Canada, MTS Allstream, and TELUS Communications Company (TCC).

[18] Commission Letter dated 5 January 2001 regarding *Decision CRTC 2000-150 SaskTel – Transition to Federal Regulation Imputation Test Methodology*.

[19] Category II competitor services are defined to include services provided to competitors that are not in the nature of essential services.

c) economic studies to calculate the costs of the residential primary exchange service (PES) in high-cost serving areas (HCSAs); this study determines the residential PES cost floor used to determine the incumbent company's total subsidy requirement (TSR).

2-6 The format of the imputation test and study results submitted to the Commission in support of general tariff (GT) filings, competitor service filings, and Type 1 and Type 2 CSA filings is described in Appendix D.

2.1 Imputation Test for the Incumbent Company's Retail Services

2.1.1 Overview of Imputation Test

2-7 When the incumbent company files a retail tariff application, the proposed tariffs are generally subject to an imputation test.

2-8 The objective of the imputation test is to ensure that the incumbent company cannot gain a competitive advantage by virtue of the manner in which it determines costs for services that competitors must obtain from the incumbent company. The imputation test requires the incumbent company to demonstrate that the present worth of the revenues will equal or exceed the present worth of the cost of the service.

2-9 The methodology and applications of the imputation test are to be consistent with those specified in the Commission Letters dated 27 November 1998 and 5 January 2001, and with Decision 2005-27.

2-10 The following are the various types of imputation tests that are filed in support of the regulated service offerings:

a) stand-alone GT services and GT bundles involving tariffed and forborne services (refer to the description in paragraph 2-13 below), including term and volume rates, and market trials and promotions; and

b) Type 1 and Type 2 CSAs.

2.1.2 Commission Directives for Stand-alone General Tariff (GT) Services and GT Bundles

2-11 In accordance with the Commission Letters dated 27 November 1998 and 5 January 2001, an imputation test is required for the following:

a) introduction of a new service;[20] for local exchange services that use unbundled local loops, the imputation test is to be provided at the rate band level; and

b) implicit or explicit price decreases for existing services and for the introduction of a new service element of an existing regulated service.

2-12 For stand-alone GT services to pass the imputation test,[21] the proposed service revenues must exceed the aggregate of the following costs:

a) the tariffed rates for Category I competitor services;

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[20] In accordance with Telecom Order CRTC 90-779, 24 July 1990, the filing of an imputation test is not required for a new service expected to have ten (10) or fewer subscribers and a total monthly charge of less than $2,000 or the equivalent thereof.

[21] Refer to paragraphs 41 and 99 of Decision 2005-27.

b) the Phase II costs for other service components provided by the incumbent company; and

c) the acquisition costs for services obtained from affiliated or non-affiliated third parties.

2-13 A GT bundle, also known as a tariffable bundle, is defined in paragraph 121 of Decision 2005-27 as follows:

> A tariffable bundle is an arrangement under which a subscriber is provided two or more service elements, at least one of which is a tariffed service element, under a single rate, a set of rates or other rate structure, and which provides a financial or other readily measurable benefit to any customer or identifiable group of customers that is contingent on the use, consumption of, or subscription to any or all service elements.

2-14 For GT bundles to pass the imputation test,[22] the proposed service revenues must exceed the aggregate of the following costs:

a) the tariffed rates for Category I competitor services, non-forborne interexchange private line (IXPL) services, and residential local exchange services;

b) the Phase II costs for other service components provided by the incumbent company; and

c) the acquisition costs for services obtained from affiliated or non-affiliated third parties.

2-15 For GT bundles, in accordance with paragraph 30 of the Commission Letter dated 27 November 1998, a detailed summary of Phase II costs is provided separately for each major service component within the bundle, whether forborne or not, that represents more than 10 percent of the total service cost, and for the costs causal to the bundle.

2-16 The imputation test is applied on a service-specific basis. In general, the definition of the service is consistent with the tariff definition. However, if the service contains rates differentiated by market segment and/or technology, then the imputation test is provided for each distinct market segment and/or technology. For example, the Commission has required separate imputation tests for the following market segments and technologies:

a) the incumbent local exchange carrier (ILEC) picked by customers to be the primary interexchange carrier (PIC) and the ILEC not picked by customers to be the PIC where the service price is different;

b) fibre and copper access services;

c) residential and business PES;

d) digital access services like Digital Network Access (DNA), by bandwidth, e.g., DS-1 and lower speeds provided separately from DS-3 and higher speeds; and

e) dial-up and high-speed for Internet access when included within a GT bundle.

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[22] Refer to paragraph 160 of Decision 2005-27.

2-17 Where the imputation test pertains to services that use unbundled Type A[23] and Type B[24] local loops, the imputation test is to be performed by rate band for those bands affected by the tariff filing. Also, where costs related to the service are not demand-driven, these service-driven costs will be identified separately in the imputation test performed for the service in total. For example, should a proposed rate decrease in Bands A, B, and C cause some restructuring costs to occur that are not band-specific but that are related to the proposal as a whole, then the imputation test will have to be met for each band individually, excluding the service-specific costs, as well as on a combined basis for the total of the three bands, including the service-specific costs.

2-18 When an imputation test is undertaken for the introduction of a new regulated GT service and a new regulated GT bundle, the associated regulatory economic study includes the causal costs associated with introducing the service. This includes both demand-variable and non-demand-variable (e.g. start-up) costs. For the non-demand-variable costs, only those incurred after the decision to introduce the service are included in the study (e.g. those costs associated with performing the regulatory economic study are excluded).

2-19 The imputation test captures the cost of new plant required to introduce the service, the cost associated with the use of existing plant, and the operating expenses to be incurred with the provision of the new service.

2-20 When an imputation test is undertaken for an implicit or explicit rate reduction or for the introduction of new service elements to an existing regulated service, the economic study reflects the demand-variable costs of continuing to provide the service at the proposed rate. Accordingly, the cost of a growth unit of demand is applied to total demand, i.e., the in-service base demand as well as growth demand. In addition, prospective non-demand-variable costs are unitized over total demand and are included in the economic study.

2-21 The following describes the Commission's methodology and disclosure requirements for the performance of imputation tests:

a) When the service under study makes use of any of the services listed for each incumbent company in company-specific Appendix R, the tariffed rates[25] for these services in effect at the time of the study are used instead of their underlying costs, as per Decision 2005-27. In the case of a new GT bundle that includes non-forborne IXPL services and residential local exchange services, the tariffed rates for these services in effect at the time of the study are used instead of their underlying costs, as per Decision 2005-27.

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[23] Type A local loop is an analogue transmission path with a two-wire electrical termination and supports the transmission of a voice-grade signal.

[24] Type B local loop is a digital transmission path with a two-wire electrical termination and supports the transmission of an Integrated Service Digital Network – Basic Rate Interface type signal.

[25] In the event that tariffed rates are not available at the required disaggregated level because factors are used to estimate costs of Category I functionality/components (e.g. land, building, and power), proxy costs may be used by applying a mark-up of 15 percent on the Phase II costs.

b) For estimating the current unit cost of existing discrete non-fungible plant where NBV is the plant book value less accumulated depreciation, Directive 5.2 of Decision 79-16 mandates the use of NBV. If NBV is higher than the opportunity cost (e.g. net salvage), the incumbent company uses NBV. If NBV is lower than the opportunity cost, the incumbent company may use the opportunity cost.

c) For the development of capital costs, the Commission has mandated[26] that the incumbent company use accounting plant life values as the measure of economic life for those capital asset classes identified in Decision 98-2.[27] Saskatchewan Telecommunications (SaskTel) uses the accounting plant life values that were effective at the time SaskTel came under Commission regulation (June 2000).

d) For the development of the ATWACC, the Commission has mandated[28] that the incumbent company use an 11 percent rate of return on common equity and a debt ratio whereby the common equity share does not exceed 55 percent, except for MTS Allstream Inc. (MTS Allstream), for which the common equity share does not exceed 60 percent (as MTS Allstream has no preferred share capital).

e) In accordance with paragraph 4, part a) of the Commission Letter dated 27 November 1998, cross-effects on other services are excluded.

f) In accordance with Decision 2002-67,[29] portfolio expenses[30] are included in regulatory economic studies and are generally determined by applying a portfolio loading factor to expense cash flows. The development of each incumbent company's portfolio loading factor and its application are described in company-specific Appendix O.

g) In accordance with Decision 2005-6,[31] the following minimum average working fill factor (AWFF) values must be used for cost studies that include central office (CO) optical transmission equipment, CO copper-based transmission equipment, fibre loop, fibre drop/distribution, and copper loop: (i) for CO optical and copper-based transmission equipment, minimum AWFFs of 80 percent for Bands A and B and 70 percent for Bands C to G; (ii) for fibre and copper loops,[32] minimum AWFFs of 70 percent for Bands A and B and 60 percent for Bands C to G; and (iii) minimum AWFFs of 50 percent for fibre drop/distribution in all bands.

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[26] Refer to paragraph 51 of Decision 98-22; also confirmed in paragraphs 325-327 of *Competitor Digital Network Services*, Telecom Decision CRTC 2005-6, 3 February 2005, as amended by Telecom Decision CRTC 2005-6-1, 28 April 2006 (Decision 2005-6); and paragraph 41 of *Aliant Telecom, Bell Canada, MTS Allstream, SaskTel and TCI – Approval of rates on a final basis for Access Tandem service*, Telecom Decision CRTC 2006-22, 27 April 2006 (Decision 2006-22).

[27] *Implementation of price cap regulation and related issues*, Telecom Decision CRTC 98-2, 5 March 1998, as amended by Telecom Decision CRTC 98-2-1, 20 March 1998 (Decision 98-2), Attachment B – Depreciation life characteristics effective 1 January 1998.

[28] Commission Letter dated 25 May 1999 regarding financial parameters used in Phase II cost studies.

[29] Refer to paragraph 216 of *TELUS Communications Inc. – Application to review and vary Decision 2000-745 and Decision 2001-238*, Telecom Decision CRTC 2002-67, 25 October 2002 (Decision 2002-67).

[30] In paragraph 67 of *Primary inter-exchange carrier processing charges review*, Telecom Decision CRTC 2004-72, 9 November 2004 (Decision 2004-72), portfolio expenses are defined as expenses directly related to a common group of services, which cannot be attributed to any specific service within that group (e.g. the development and management of sales/marketing/promotional programs associated with a common group of services).

[31] Refer to paragraph 363 of Decision 2005-6.

[32] If disaggregate feeder/distribution capital estimates are available, the AWFFs specified in Decision 2001-238 should be used.

h) In Decision 2006-75,[33] the Commission determined that rate ranges would generally be appropriate for local exchange and related services, with exceptions for certain services in recognition of their importance with regard to such matters as public safety, protection of privacy, and accessibility for persons with disabilities. For such services, the minimum rate in the rate range should pass the imputation test.

i) The following information associated with a regulatory economic study must be placed on the public record:[34]

- Cost of Capital, Cost of Debt, Cost of Equity, Debt Ratio;
- Variable Common Cost (VCC) Factor, Revenue-Percent Charge Rate;
- Income Tax Rate, Revenue Miscellaneous Tax Rate;
- Large Corporation Tax Rate, Capital Miscellaneous Tax Rate, Other Tax Rates;
- Portfolio Expense Loading Factor (for TELUS Communications Company (TCC), provide the aggregate of the portfolio expenses expressed as a percentage of non-portfolio expenses);
- Individual Structure Cost Factors (e.g. Buildings, Land, Poles, Conduit);
- All fill factors used in the study;
- All plant lives used in the study that differ from the approved plant lives;
- All productivity factor(s); and
- The cumulative net inflation factor(s) used to restate historical expenses or capital to the beginning of the study period.

Market Trials and Promotions

2-22 Consistent with Decision 2005-25,[35] imputation tests are required for market trials or promotions of limited duration. Promotions involving a local wireline service must be available and equally promoted across one or more entire rate bands; they must not be limited to customers of competitors; they must pass an imputation test; the combined enrolment and benefit period of a promotion cannot exceed six consecutive months; there must be no customer lock-in requirement beyond the promotion period; and there must be a minimum six-month waiting period after the expiry of the most recent previous promotion before offering a new promotion involving the same local wireline service. The study period of the economic study should reflect the time period between the current promotion and the next promotion.

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[33] Refer to paragraphs 13, 55, 57, 58, and 64 of *Rate ranges for services other than voice over Internet Protocol services*, Telecom Decision CRTC 2006-75, 23 November 2006 (Decision 2006-75).

[34] Commission staff letter dated 30 June 2005 regarding *Decision 2003-83 Direct Connection Service – Requests for Disclosure of Confidential Information and for Further Responses to Interrogatories.*

[35] *Promotions of local wireline services*, Telecom Decision CRTC 2005-25, 27 April 2005.

Term and Volume Contracts for GT Services

2-23 In accordance with Decision 2005-27,[36] for term and volume contracts associated with access GT services, the imputation test must be passed at the rate band, service, and per-unit rate levels, and should recognize the following:

a) the imputation test at the rate band level takes into account the fact that costs for identical services may differ in different rate bands;

b) the imputation test at the service level takes into account the fact that costs at the rate band level do not capture the costs that are associated with the overall service, such as costs causal to the service; and

c) the lowest per-unit rate (explicit or implicit) in a grid must meet the imputation test.

By contrast, for term and volume contracts associated with non-access GT services, the imputation test must be passed at the service level, and per-unit rate level.

2.1.3 Commission Directives for Customer-Specific Arrangements – Type 1 and Type 2

2-24 An imputation test is required[37] when the following adjustments are proposed in respect of the original or previously approved Type 1 and Type 2 CSA contracts:

a) a change to the remaining contract period length where termination charges have been waived;

b) an addition of a new service(s) or feature(s) or cost element(s) that cause the total annualized CSA costs to increase by 5 percent or more relative to the previous imputation test estimate; and

c) a deletion of a service(s) and/or changes to the rate structure or implicit/explicit rate reductions (e.g. waiving of rate elements, change to an existing bonus incentive, addition of a bonus incentive) that cause the total annualized CSA revenues to decrease by 2 percent or more relative to the previous imputation test estimate if the previous imputation test had a mark-up of less than 10 percent, or that cause the total annual CSA revenues to decrease by 5 percent or more relative to the previous imputation test if the previous imputation test had a mark-up of 10 percent or more.

2-25 For Type 1 CSAs to pass the imputation test,[38] the proposed service revenues must exceed the aggregate of the following costs:

a) the tariffed rates for Category I competitor services;

b) the Phase II costs for other service components provided by the company; and

c) the acquisition costs for services obtained from affiliated or non-affiliated third parties.

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[36] Refer to paragraphs 260 to 264 of Decision 2005-27.
[37] Refer to Commission staff letter dated 13 June 2005 regarding revised imputation test guidelines for Type 1 and Type 2 CSAs.
[38] Refer to paragraph 99 of Decision 2005-27.

2-26 For Type 2 CSAs to pass the imputation test,[39] the proposed CSA bundled service revenues must exceed the aggregate of the following costs:

a) the rates for those service components available under the incumbent company's GT, including tariffs for Category I and II competitor services, over the duration of the customer-specific contract;

b) the Phase II costs for those components provided by the incumbent company not covered by the GT rates included in item a); and

c) the acquisition costs of any service elements in the CSA bundle acquired from affiliated or non-affiliated parties.

2-27 The same general costing methodology, Commission directives, and disclosure requirements described for the regulated GT services also apply when an imputation test of Type 1 and Type 2 CSA filings is performed. Pre-introductory costs associated with Type 1 and Type 2 CSAs are filed with the Commission on a memorandum basis.

2-28 Further, in accordance with the Commission staff letter dated 13 June 2005 regarding revised imputation test guidelines for Type 1 and Type 2 CSAs, the Type 2 CSA imputation tests are to reflect the costs of Category I and II competitor services by imputing the applicable tariffed rates. In the event such costs cannot be easily separated and calculated on this basis, proxy costs for Category I and II service functionalities/components may be used by applying a mark-up of 15 percent to the Phase II costs of Category I service functionalities/components and a mark-up of 25 percent to the Phase II costs of Category II service functionalities/components.

2-29 With respect to Type 2 CSAs, the following additional directives apply in the case of Bell Canada, consistent with the Commission staff letter dated 18 July 2003 regarding CSAs:

a) monthly equivalent costs (MECs) associated with capital costs in CSAs are to be developed using a study life of no more than 10 years and assuming that all capital costs generally occur at the beginning of the study life. In situations where the demand for certain services offered as part of a CSA occurs continuously over the year (e.g. toll messages and minutes), the MECs are to be derived assuming that all capital costs occur continuously over the first year;

b) for land- and building-related expenses, the company-specific factor is to be used;

c) a portion of the advertising expense for each forborne service component is to be included in CSA imputation tests using the following formula:

$$\frac{\text{Contract revenue for the forborne service component}}{\text{Total company revenue for the forborne service component}} * \text{Total company advertising expense for the forborne service component}$$

[39] Refer to paragraph 236 of Decision 2005-27.

d) contract-specific unit expenses should be used as opposed to incumbent company-average unit expenses. If contract-specific unit expenses are not available, corporate average unit expenses may be used; however, such expenses are to be marked up by 25 percent; and

e) if costs related to service level commitments and/or performance penalties are not determined explicitly, an amount of 1 percent of the service component revenue is to be used as an estimate of that cost.

2.2 Regulatory Economic Studies for Competitor Services

2-30 Economic studies for competitor services are performed to determine the cost floor and to establish the prices to recover causal incremental costs, and an approved mark-up.

2.2.1 Commission Directives for Competitor Services

2-31 With respect to the performance of a regulatory economic study for Category I and II competitor services identified in company-specific Appendix S, the study reflects all demand-variable and non-demand-variable causal costs associated with that service from the point of decision to offer the service. For example, in the case of non-demand-variable costs, costs such as those associated with performing the economic study will be included since the decision to offer the service is made prior to the economic evaluation being performed.

2-32 The economic study captures the cost of new plant required to introduce the service, the cost associated with the use of existing plant, and the operating expenses to be incurred with the provision of the new service.

2-33 The same general costing methodology, Commission directives, and disclosure requirements described for the regulated GT services, with the exception of rate ranges, also apply when an imputation test for a competitor service filing is performed.

2-34 For Category I competitor services, the following additional methodology requirements apply:

a) For the services listed in company-specific Appendix T, an "all-carriers" approach[40] is used when developing the costs for these services. This means that the present worth of non-demand-variable costs to provide service to competitors is unitized on the total of competitor and incumbent growth and in-service demand. The demand-variable costs reflect the cost to grow one unit of additional demand. The "all-carriers" approach also requires the estimation of the cost to add or remove one unit of demand for the competitor and applies this to competitor in-service and growth demand, plus the cost to add or remove one unit of incumbent demand, which is applied to the incumbent in-service and growth demand. The total cost for the competitor demand and the incumbent demand is then unitized over the total demand.

b) In accordance with the Commission staff letter dated 14 July 2003 regarding Phase II costing information requirements, annual capital increase, expense increase, and productivity factors are excluded when costs for Category I competitor services are developed. These factors are applied annually after the development of the cost-based rate, as part of the price cap process, except for services identified as being exempt from this treatment as set out in Appendix 1 of Decision 2002-34.

[40] Accepted industry practice that determines the average resource cost based on the combined ILEC and competitor demand.

c) In accordance with the Commission staff letter dated 7 October 2005 regarding modifications to the GT economic study report guidelines, if the Category I competitor service employs an underlying service component that is itself a Category I competitor service, this cost can be determined by removing the 15 percent mark-up from the tariffed rate, i.e., by dividing the tariffed rate by 1.15.

d) The following additional information must be placed on the public record with respect to regulatory economic studies for Category I competitor services, in accordance with the Commission staff letter dated 30 June 2005:

- all entries of the Summary of Revenue and Cost Tables, including the present worth of demand, and present worth of EOS value included in the present worth of annual costs (PWAC); and
- competitor demand by year.

2.3 Regulatory Economic Studies to Calculate the Total Subsidy Requirement (TSR)

2-35 In accordance with Decision 2000-745,[41] a national contribution collection mechanism was introduced. Under this mechanism, it is necessary for each incumbent company to determine the TSR in each of its HCSA bands.

2-36 The TSR consists of four basic components:

a) residential PES revenues, including the service improvement plan (SIP)-related revenues obtained from residential customers;

b) residential PES costs established on the basis of Phase II costing methodologies, including SIP costs for HCSAs in accordance with Decision 2002-34;[42]

c) a mark-up of 15 percent on the Phase II costs of residential PES; and

d) a target of $5 per month per network access service (NAS) that is assumed to be generated by other local services used by residential subscribers.

2-37 In accordance with Decision 2000-745, the TSR is calculated for each HCSA band.

2-38 The following section discusses the development of Phase II costs for residential PES for the purposes of the TSR calculation.

2.3.1 Commission Directives for the TSR

2-39 The purpose of the economic study is to determine the subsidy amount that, when combined with the permitted rate, is just sufficient to provide an efficient existing operator with an economic incentive to continue to provide basic residential service in a particular HCSA band.

2-40 Residential PES costs consist of the demand-variable cost of new plant required to grow a unit of demand, the cost associated with the use of existing plant, and the operating expenses to be incurred as a result of the growth unit of demand.

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[41] Refer to paragraphs 41 to 52 of *Changes to the contribution regime*, Decision CRTC 2000-745, 30 November 2000 (Decision 2000-745).

[42] Refer to paragraph 937 of Decision 2002-34.

2-41 The following describes the Commission's methodology requirements for conducting the economic study:

a) In accordance with Decision 2001-238,[43] for distribution and feeder plant, the national AWFF estimates of 60 percent and 77 percent, respectively, for non-HCSA bands, and 56 percent and 72 percent, respectively, for HCSA bands are used.

b) Maintenance is capped as per Decision 2001-238.[44] In each band other than Band G, the maintenance expense expressed as a percentage of the total capital loop plant must not exceed 10 percent. For Band G, the maintenance expense expressed as a percentage of the total capital loop plant must not exceed 20 percent, except for Bell Canada and NewTel Communications Inc. (now part of Bell Aliant Regional Communications, Limited Partnership (Bell Aliant)), which is to be limited to $20 per NAS.

c) Total operating expenses are also capped as per Decision 2001-238.[45] For residential PES, total operating expenses are capped in each band at an amount of $2.50 per NAS, per month.

d) Annual capital increase, expense increase, and productivity factors are excluded when the costs are developed. Similarly, the revenue-percent charge is not applied. All of these factors are applied annually, as per Decision 2001-238,[46] after the development of the Phase II costs, as part of the TSR calculation itself.

e) For the development of capital costs, the Commission has mandated that the incumbent company use accounting plant life values as the measure of economic life for those capital asset classes identified in Decision 98-2. SaskTel uses the accounting plant life values that were effective at the time SaskTel came under Commission regulation (June 2000).

f) For the development of the cost of capital, the Commission has mandated that the incumbent company use an 11 percent rate of return on common equity and a debt ratio whereby the common equity share does not exceed 55 percent, except for MTS Allstream, for which the common equity share does not exceed 60 percent (as MTS Allstream has no preferred share capital).

g) In accordance with paragraph 4, part a) of the Commission Letter dated 27 November 1998, cross-effects on other services are excluded.

h) In accordance with Decision 2002-67, portfolio expenses are included in regulatory economic studies and are generally determined by applying a portfolio loading factor to expense cash flows. The development of each incumbent company's portfolio loading factor and its application is described in company-specific Appendix O.

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[43] Refer to paragraphs 95 to 103, and 154 of *Restructured bands, revised loop rates and related issues*, Decision CRTC 2001-238, 27 April 2001, as amended by Decision CRTC 2001-238-1, 28 May 2001, and Decision CRTC 2001-238-2, 7 August 2001 (Decision 2001-238).

[44] Refer to paragraph 158 of Decision 2001-238.

[45] Refer to paragraph 160 of Decision 2001-238.

[46] Refer to paragraph 156 of Decision 2001-238.

3.0 REGULATORY ECONOMIC STUDY PROCESS

3.1 Introduction

3-1 The following steps are undertaken to conduct all regulatory economic studies to meet regulatory requirements:

a) Study Definition and Service Description;

b) Demand and Revenue Estimation;

c) Resource and Cost Estimation;

d) Economic Evaluator Development; and

e) Study Report as outlined in Appendix D.

3-2 The following sections describe the above steps. The methodology requirements described in this manual are applied when developing cash flows and evaluators for economic studies performed.

3.2 Study Definition and Service Description

3-3 Development of the study definition and the service description is the first step in conducting regulatory economic studies. The details of the purpose of the study are identified. For instance, it should be identified if the study is in support of a GT service introduction or a change to an existing GT service, such as the introduction of a new feature or a modification to the rate structure.

3-4 In the case of a new GT service or a new tariff element of an existing GT service, a general description of the service/tariff element being introduced is to be provided. This may include, for example, services being bundled (if applicable), specific functionalities, customer eligibility, contract options, network requirements, and any other information that provides a clear understanding of the service/tariff element being introduced. Diagrams of the network elements included in the proposed service and their interconnection are to be provided if they enhance the understanding of the service/tariff element. Also, an outline of the benefits that customers will realize when they subscribe to the new service/tariff element(s) is to be provided.

3-5 In the case of a revision to an existing GT service, a detailed description of the initiative is to be provided.

3.3 Demand and Revenue Estimation

3-6 The incumbent company estimates demand and related revenues whenever a regulatory economic study is required.

Demand Estimation

3-7 One of the first requirements is to determine forecasts of demand for the service under study. Demand is defined as the quantities of a product or service that customers are willing to purchase at specified prices and at a specified time. A demand forecast for each year of the study period for the service under study is used for estimating revenues and quantities of resources. The demand estimates usually are comprised of forecasts of demand for the incumbent company's serving territory for the service under study.

3-8 Among the factors considered by the incumbent company when estimating these demand forecasts are the following:

a) service characteristics;

b) pricing;

c) advertising strategy;

d) sales channels;

e) competitive intelligence;

f) availability of substitute services;

g) demographics of the market; and

h) total market and market share the incumbent company is expected to obtain.

3-9 For existing services, whenever possible, historical information on how demand changes as the above factors change is used to estimate demand under a new price regime. For new services, estimates are derived from knowledge of the market, experience with similar services, and a consideration of the factors noted above.

3-10 Sometimes a forecast of total demand is segmented out at a more disaggregated level. Segmentation may be necessary by exchange, rate band level, transmission speed, PIC, or non-PIC for regulatory economic studies. The procedure for determining the costs for certain Category I competitor services based on regulatory economic studies may require that an "all-carriers" approach be used for the demand estimates. The "all-carriers" approach includes consideration of the demand caused by other potential market participants in addition to the incumbent company's demand in its own serving territory for the service under study. Therefore, the demand estimate, using an "all-carriers" approach, is the sum of retail and wholesale demand for the service from the incumbent company's perspective.

Revenue Estimation

3-11 The procedure followed by the incumbent company for estimating future revenue cash flows for regulatory economic studies relies on the demand forecast. The annual demand forecast supplies the quantities for the service under study. Unit rates are applied to these quantities to estimate future annual revenue cash flows.

3-12 The unit rates used by the incumbent company for estimating future annual revenue cash flows for existing services reflect the amount and timing of any proposed rate changes. The unit rates used by the incumbent company for estimating future annual revenue cash flows for new services are based on the proposed rates. The proposed rates used are held constant throughout the study period. The rating philosophy behind the proposed rates could be market-based, cost-based, or value-of-service-based. These rating philosophies are not necessarily mutually exclusive. The rate strategy for the proposed rates is usually based on the target market: competitive versus non-competitive, the elasticity of demand, the pricing strategies of competitors, and the rates for complements and substitutes. The rate strategy can also address customer preferences in terms of simplicity, ease of understanding, and flexibility as well as economic implementation, maintenance, and tracking.

3.4 Cost Estimation

3-13 Causally related costs are expressed in terms of cash flows in an economic study. Cash flows are related to operational impacts, equipment requirements, and taxes. The development of these cash flows is discussed in this section.

3.4.1 Operational Impacts

3-14 The following identifies the major groups of operational activities (or processes) for which incremental causal impacts have to be determined.

Expenses Causal to Service

Advertising and Promotion

3-15 Costs specific to the service, such as newspaper, television, and web-based advertising campaigns and bill inserts, are included in this category.

Billing-related

3-16 Costs associated with billing the service, such as development, implementation, and changes to methods and procedures, are included in this category.

Other

3-17 Costs associated with other operational impacts, such as project management or product management, are included in this category. Other costs may also include (if they are not included elsewhere) the revenue-percent charge associated with revenues causal to service (assumed equal to costs under the revenue assumption) and portfolio expenses associated with expenses causal to service.

Expenses Causal to Demand

Maintenance

3-18 Costs associated with the maintenance of the capital equipment (e.g. rearrangements, preventative maintenance, power, and maintenance contracts) and service assurance (e.g. receiving trouble calls, testing and dispatching troubles, repairs, and shop repair) related to the service are reported in this category. As well, costs associated with the ongoing technical and administrative support, training, and information technology activities related to the maintenance function are reported in this category. Ongoing technical and administrative support includes collecting usage data, managing continuous improvements of the network, and receiving, identifying, analyzing, resolving, and reporting on network faults and failures.

Service Provisioning

3-19 Costs associated with operator and directory services, business office activities, service order execution, and licensing fees, as well as costs associated with the ongoing technical and administrative support, training, and information technology activities related to the service provisioning function are reported in this category. Circuit rentals should be included in the third-party acquisition costs and should be reported separately in accordance with the study report guidelines identified in Appendix D.

Advertising and Sales Management

3-20 Costs associated with sales, advertising, and promotional activities as well as the associated ongoing administrative support activities are reported in this category.

Billing

3-21 Costs associated with billing and collection as well as the associated ongoing administrative support activities are included in this category.

Other

3-22 Costs associated with logistics and other activities not included in Maintenance, Service Provisioning, Advertising and Sales Management, and Billing are reported in this category. Other costs also include (if they are not included elsewhere) the revenue-percent charge associated with revenues causal to demand (assumed equal to costs under the revenue assumption) and portfolio expenses associated with expenses causal to demand.

3.4.2 Equipment Requirements

3-23 The equipment requirements associated with the proposal under study are also identified. When a new service, a rate reduction, or a change in the service functionalities is introduced, the provisioning requirement of customer premises equipment, access facilities, switching equipment, inter-office facilities, or other hardware and software must be evaluated to determine the capital expenditure impacts. The following identifies the major groups of equipment requirements for which incremental causal impacts have to be determined.

Capital Causal to Service

Hardware

3-24 Costs associated with hardware specific to the service, such as the purchase of intelligent peripherals, are included in this category.

Software

3-25 Costs associated with software specific to the service (which are capitalized), such as the purchase, development, modification, software upgrades, and implementation of software applications, are included in this category.

Capital Causal to Demand

Outside Plant Equipment

3-26 Costs associated with outside service wire, copper and fibre cables, copper protectors, poles, and conduit are reported in this category. In cases where costs associated with other types of outside plant equipment are included, a description of the equipment is to be provided.

Switching Equipment

3-27 Costs associated with switches (e.g. DMS equipment) and switching application software are reported in this category. In cases where costs associated with other types of switching equipment are included, a description of the equipment is to be provided.

Transmission Equipment

3-28 Costs associated with electronic equipment used for the various modes of digital and analogue transmission (e.g. remotes, inter-office trunks) and any associated application software are reported in this category. In cases where costs associated with other types of transmission equipment are included, a description of the equipment is to be provided.

Land, Building and Other

3-29 Costs associated with land, buildings, towers, general purpose computers, power equipment, and main distribution frame, and other costs not categorized under Outside Plant Equipment, Switching Equipment, or Transmission Equipment are reported in this category. In cases where costs associated with other types of capital are included, a description of the capital is to be provided.

3.4.3 Resource and Cost Estimation

3-30 As discussed above, cash flows are related to operational impacts, equipment requirements, and taxes.

3-31 The quantification of resource cost cash flows for capital and expense requires the resource units consumed, as well as the unit cost for the resource itself. Capital and expense cash flows are quantified by multiplying the forecast of resource units consumed by the unit cost per resource consumed.

3-32 The estimation of the resource units consumed is dependent on a number of factors. The process of estimating each incumbent company's resource units is described in detail in company-specific Appendix H.

3-33 In any study, the preferred approach is to quantify at the most disaggregate level the resources consumed and the unit cost associated with each resource. For example, the following types of information specific to the service under study may be gathered by the study analyst, project/product manager, and subject matter experts:

a) expenses associated with items such as maintenance and advertising contracts;

b) project-specific supplier prices for equipment;

c) work performed by incumbent company personnel and non-incumbent company personnel (e.g. third-party technicians placing and splicing cables); and

d) training costs.

3-34 Where the specific information is not readily available, the incumbent company develops cash flows using corporate average information. The following corporate average information may be used in the incumbent company's economic studies:

a) corporate average capital unit costs (company-specific Appendix I);

b) capacity costing (Appendix B);

c) structure and technology cost factors (company-specific Appendix K);

d) labour unit costs (company-specific Appendix N);

e) corporate average operating expense (OE) unit costs (section 3.4.3.7);

f) replacement capital (company-specific Appendix Q);

g) maintenance factors (company-specific Appendix M);

h) warehouse and distribution factors (company-specific Appendix L); and

i) inflation and productivity factors (company-specific Appendix P).

3-35 In addition, the incumbent company uses the following information to develop cost cash flows:

a) VCC factor and portfolio loading factor (company-specific Appendix O);

b) taxes (company-specific Appendix W); and

c) revenue-percent charge (company-specific Appendix W).

3-36 The development and use of this information are discussed in the sections below.

3.4.3.1 Corporate Average Capital Unit Costs

3-37 A capital unit cost represents the current capital cost to the incumbent company of a unit of resource required to provide service. The level of unitization for a particular capital item reflects what is practical and useful for the development of cash flows. For instance, the unit of resource can be the item itself (e.g. a SONET multiplexer) or some measure of capacity of the unit (e.g. per DS-1).

3-38 Capital unit costs are developed by type of plant. A unit can be made up of several sub-units. For example, cable unit costs are made up of sub-units such as terminals, protectors, and pedestals.

3-39 A capital unit cost (which is also referred to as an installed first cost) is made up of the following elements:

a) Equipment Price

This is the current year's product price from the supplier or a contract price that will come into effect shortly. The price includes supplier discounts provided to the incumbent company. Data on equipment prices is obtained from suppliers' contracts and the incumbent company's accounting system. Provincial Sales Tax (PST) is applied to the equipment price, where applicable.

b) Company's Engineering and Installation Labour

The incumbent company's engineering and installation labour costs are capitalized or expensed according to Generally Accepted Accounting Principles (GAAP). The capitalized portion of engineering and installation labour costs associated with placing the piece of equipment is included in the capital unit cost. To develop engineering and installation costs, information regarding installation practices is obtained from several data sources: suppliers' ordering guides, incumbent company engineering and provisioning groups, and incumbent company practices and provisioning guidelines. The capitalized portion of the incumbent company's engineering and installation labour costs is calculated in the same manner as labour unit costs.

c) Non-company Labour

Some of the engineering and installation associated with a piece of capital may be provided by contractors. The contract cost is capitalized or expensed according to GAAP and the capitalized portion is included in the capital unit cost.

d) Warehouse and Distribution Loading

The capitalized portion of the costs associated with warehouse and distribution activities is included as a loading on the equipment price. The development of each incumbent company's Warehouse and Distribution Loading factors is provided in company-specific Appendix L.

3-40 A numerical example of the development of a hypothetical capital unit cost is provided for each incumbent company in company-specific Appendix I. While the incumbent company produces many capital unit costs, the same basic methodology is used to develop all capital unit costs.

3-41 Where unit costs are based on data from previous years, CIFs are applied in order to express the unit cost in current year dollars. The development and application of CIFs are discussed for each incumbent company in company-specific Appendix P.

3-42 In addition to inflation, capital costs also need to reflect the impact of productivity changes over the study period. The development and application of productivity improvement factors are discussed for each incumbent company in company-specific Appendix P.

3-43 For equipment that is shared among a number of services, cost of advancement or capacity costing is required for the development of capital unit costs.

3.4.3.2 Capacity Costing and Working Fill Factor

3-44 When a proposed course of action requires the use of shared facilities, the impact of using a portion of the capacity of the shared equipment for the proposal under study is included in the economic study. This is estimated by considering the effect that the additional demand for the facility will have on future facility relief requirements and the advancement of future relief that may be caused. This is referred to as the cost of advancement.

3-45 In many cases, it is not practical to calculate the cost of advancement because of the complexity and cost of the associated detailed engineering network study (e.g. identification of a large number of locations, identification of exhaustion dates that are subject to a complex analysis due to other potential services using the same facility). Instead of a calculation of the cost of advancement, a reasonable approximation of the causal cost is estimated based on the capacity cost approach.

3-46 When estimating the capacity cost, it is important to recognize that facilities will have some non-service-generating capacity, for example, some spare capacity may be required for maintenance and protection. The cost for non-service-generating capacity is incorporated into the capital costs through the application of a working fill factor.

3-47 The capacity cost method is described in Appendix B. The description and development of each incumbent company's working fill factor by major facility, as applicable, are set out in company-specific Appendix Y.

3.4.3.3 Structure and Technology Cost Factors

3-48 In the performance of economic studies, the preferred approach is to estimate costs at the most disaggregated level possible. However, situations exist where this is either not possible or the effort required is not commensurate with the materiality of the costs. In addition, for certain shared facilities that in effect have unlimited capacity (e.g. fibre cable in the inter-office network), capacity costing is not an appropriate method of calculating costs. For these reasons, the incumbent company develops a number of capital cost factors[47] (CCFs) to estimate the capital costs for support structures that house or support equipment (e.g. poles, conduit) and some technologies.

3-49 For each support structure, a factor is developed, which, when applied to the capital cost of the related equipment (e.g. aerial cable for poles), enables the estimation of a cash flow for each structure. These CCFs are termed structure cost factors (SCFs).

3-50 Similarly, the capital cost of power, fibre optic cable for the inter-office network, and the adjunct network associated with the Operating Support System is also estimated using cost factors applied to the capital cost of the related technology. These CCFs are termed technology cost factors (TCFs).

3-51 In the case of fibre in the access network, a number of components must be considered. Generally, fibre optic access service consists of optical equipment at a customer's premises; a building optical cable between the customer's premises and the first point of connection to the incumbent company's network, likely a manhole; and the connection of the building optical cable to optical fibres in the incumbent company's network. These fibres ultimately terminate on the optical equipment in the incumbent company's premises. The cost of advancement or capacity costing is applied to estimate the fibre costs of optical equipment (on both the customer's and the incumbent company's premises) and of optical cables (dedicated to the access service) rather than using a CCF.

3-52 There may be situations where it can be demonstrated that deploying new fibre is more cost-effective than augmenting the optical equipment. In this case, the capacity limits of the optical fibre are effectively equal to the capacity limits of the connected fibre optic equipment. In this situation, capacity costing of the optical fibre, using the capacity limits of the associated optical equipment, is appropriate rather than using a CCF.

3-53 Cash flows are estimated using the following cost factor approach:

Capital Cash Flow for the Structure = SCF * Capital Expenditure for Related Equipment

Capital Cash Flow for the Technology = TCF * Capital Expenditure for Related Technology

3-54 A description of each of the SCFs and TCFs and the algorithms used to develop these factors for each incumbent company are provided in company-specific Appendix K.

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[47] Accepted industry practice to estimate capital costs associated with support structures and certain technologies where the cost cannot be estimated directly or the effort required is not commensurate with the materiality of the costs.

3.4.3.4 Replacement Capital, Salvage, and Removal Factors

3-55 Capital expenditures are cash flows associated with assets expected to generate future benefits for periods of more than one year. Capital equipment is useful for more than one year and accordingly, a life estimate is developed for each piece of equipment. This life estimate, which is referred to as the useful life, is used synonymously with the term economic life.

3-56 To estimate the retirement pattern of equipment and its associated economic life, the incumbent company makes use of information from depreciation studies. Wear and tear, decay, and obsolescence are some of the factors that result in the retirement of plant from service. This pattern of retirement is also known as the survivor curve. The methodology and application of survivor curves to develop replacement capital are discussed for each incumbent company in company-specific Appendix Q.

3-57 When an economic study is conducted, the level of capital equipment required to provide the service under study is assumed to remain fully intact, i.e., the retirements that occur over the life of the equipment are offset by injections of replacement capital over the study period. This replacement capital is a capital cash flow in the study, in addition to the initial investment in plant.

3-58 Capital expenditures cause two other cash flows to be included in an economic study: salvage and removal. Salvage is a cash inflow resulting from the disposition of a capital asset outside the incumbent company. Removal is a cash outflow resulting from removing a capital asset at the end of its useful life. Salvage and removal cash flows are typically generated by applying salvage and removal factors to capital expenditures.

3.4.3.5 EOS Terminal Value

3-59 When the study has captured the capital expenditures on plant, through either new purchase price or capacity costing, an EOS value is calculated to reflect any remaining service potential associated with the plant beyond the end of the study period using the DSP method. The terminal value is generated by the economic evaluation model. Appendix C provides a detailed discussion of the DSP methodology.

3.4.3.6 Labour Unit Costs

3-60 In order to provide a service, the incumbent company may need to perform a variety of activities or functions. The associated expenses may be explicitly estimated by determining the units of input required (such as number of hours) and applying the associated unit cost (average hourly labour unit cost).

3-61 If estimates of the time required to perform an activity are available, this will require the estimation of the following:

a) activity units consumed, e.g., number of times an activity occurs;

b) time required to perform that activity; and

c) corporate average hourly labour cost.

3-62 The corporate average hourly labour cost is referred to as the labour unit cost (LUC). A detailed discussion of the development and application of each incumbent company's LUCs is provided in company-specific Appendix N.

3.4.3.7 Corporate Average Operating Expense (OE) Unit Costs

3-63 The incumbent company may rely on the use of corporate average OE unit costs to develop estimates of the associated operating expenses.

3-64 Corporate average OE unit costs are typically developed for the incumbent company's major expense categories or processes (e.g. Service Provisioning, Advertising and Sales Management, Billing). The incumbent company's accounting system, or activity-based costing (ABC) system, generally provides the data source used to estimate corporate average OE unit costs. Company-specific Appendix J provides a list of activities/functions that are mapped into the major expense categories or processes for the development of OE unit costs. Company-specific Appendix Z provides a description of the company's accounting system or ABC system used to develop the OE unit costs.

3-65 For developing corporate average OEs, costs associated with the activities or functions are generally classified in the following manner:

a) Demand-driven costs are those that are considered causal to the demand of a particular service and thus will vary with the volume of service sold, e.g., service order processing costs.

b) Service-driven costs are those that are considered causal to a particular service but not to its level of demand. Service-driven costs will thus be incurred as long as the service is being offered, will be avoided only if the service is discontinued, and will not vary with the volume of service sold, e.g., causally related product management costs.

3-66 For the majority of demand-driven and service-driven activities, an activity/function level corporate OE unit cost is developed.

3-67 For the purpose of corporate average OE development, major one-time costs included within an activity cost are identified separately and excluded from the OE unit costs if they are not expected to be incurred in the future. Major one-time incumbent company initiative costs (e.g. network trial costs or work stoppage costs) are examples of such one-time costs.

3-68 Once costs are obtained for each activity or function from the incumbent company's accounting or ABC system, activity/function level unit costs are derived by dividing each activity/function cost by an appropriate cost driver. Each activity or function is related to an event that causes that activity or function to occur. This is referred to as the natural cost driver for that activity. Where the natural driver cannot be used, a different driver, called the practical driver, is used to unitize the cost (e.g. for the order fulfillment administrative support, the natural drivers are the number of managers and non-managers requiring administrative support, and the practical drivers are the dollars of expense for the order fulfillment process). Activity/function level OE unit costs are thus derived by dividing each activity cost by the practical driver.

3-69 In addition to corporate average activity/function level OE unit costs, corporate average service-specific OE unit costs may be developed for some services.

3-70 For example, service-specific OE unit costs are developed when, for a particular service, the resource requirement for a particular activity or function may be significantly different from the resource requirement for other company services.

3-71 In addition, even though the activity level unit cost may be expressed in terms of a practical driver, the information on the practical driver may not be readily available for some services. In this case, corporate average service-specific OE unit costs may also be developed.

3-72 The development of forward-looking costs must take into account the impact of factors expected to influence costs in the future. Expected cost changes are captured through the use of the EIF, and productivity changes are measured through the application of the applicable productivity factor. Development and application of these factors are discussed for each incumbent company in company-specific Appendix P.

3-73 The details on the development of corporate average activity level OE unit costs and the associated practical/natural drivers are provided for each incumbent company in company-specific Appendix J.

3.4.3.8 Maintenance Factors

3-74 When estimates of maintenance expenses are not available from the labour unit cost or OE unit cost approaches, maintenance factors, expressed as a percentage of capital, may be used to develop forward-looking maintenance expense estimates for use in the regulatory economic studies.

3-75 Maintenance factors are applied to the total installed capital investment including engineering, installation, shipping and handling, etc. The maintenance expense is determined by multiplying the capital investment dollars of a particular capital category by the corresponding maintenance factor.

3-76 The development of these maintenance factors for each incumbent company, as applicable, is described in company-specific Appendix M.

3.4.3.9 Variable Common Costs (VCC) and Portfolio Expenses

3-77 VCC includes those costs that vary with the amount of demand for a service but are not already included in direct and indirect resources.

3-78 The incumbent company includes VCC in its economic studies through the application of the VCC factor, to ensure compliance with Decision 79-16. The methodology, application, and development of the VCC factor for each incumbent company are described in company-specific Appendix O.

3-79 The incumbent company also includes portfolio expenses in its economic studies through the application of the portfolio loading factor(s) to expense cash flows. In the case of Bell Aliant, Bell Canada, MTS Allstream and SaskTel, company-wide portfolio loading factors are to be applied, consistent with Decision 2004-72.[48] The methodology, application, and development of the portfolio loading factor for each incumbent company are described in company-specific Appendix O.

[48] Refer to paragraphs 66 to 71 of Decision 2004-72.

3.4.3.10 Inflation and Productivity Factors

3-80 Inflation and productivity factors are included in economic studies. The development of these factors and their application are described in detail for each incumbent company in company-specific Appendix P.

3.4.4 Costing Models

3-81 Costing models may be relied upon to develop cash flows associated with the incumbent company's local networks and/or services.

3-82 The methodology and algorithms used in these costing models to estimate costs for use in regulatory economic studies are described for each incumbent company in company-specific Appendix U.

3.4.5 Taxes and Revenue-Percent Charge

3-83 Taxes and the revenue-percent charge are expense cash flows, generated by the economic evaluation model. The following are included in the economic study:

a) Corporate Tax;

b) Revenue Miscellaneous Tax;

c) Revenue-Percent Charge; and

d) Income Tax.

3-84 Each of these is defined below:

a) Corporate Tax

The incumbent company may be subject to a provincial large corporation tax and other capital taxes (e.g. telecommunications capital tax). The provincial large corporation tax is typically based on the corporation's paid-up capital and the other capital tax is typically based on the NBV of plant assets. This cash flow is included in the corresponding capital costs provided in the study report.

b) Revenue Miscellaneous Tax

The incumbent company may be subject to provincial revenue tax. Revenue miscellaneous tax is typically based on a provincial rate applied to specific provincial telecommunication revenues.

c) Revenue-Percent Charge

The revenue-percent charge (which is also known as the Canadian telecommunications revenue subsidy charge) is a contribution charge that applies to the majority of the incumbent company's telecommunications services revenues. Notable exemptions include revenues associated with retail Internet access services, paging services, and the sale or rental of terminal equipment. This expense cash flow is developed by applying the current Commission-approved revenue-percent charge to revenue cash flows (assumed equal to costs under the revenue assumption) included in the study.

d) Income Tax

Corporations operating in Canada are subject to corporate income taxes at both the provincial and federal levels. The income tax payable cash flow is calculated based on the incumbent company's income tax rate and taxable income.

The methodologies used to calculate the above tax cash flows are described for each incumbent company in company-specific Appendix W.

3.5 Economic Evaluator Development

3-85 Having developed the cash flows, it is necessary to develop a robust and consistently defined set of economic evaluators in order to correctly interpret the outcomes of economic studies. Since cash flows are estimated in current dollars, these cash flows must be discounted to a common point in time. Once these are discounted, the economic evaluators are developed.

3-86 The following evaluators are developed for regulatory economic studies:

a) Present Worth of Annual Cost (PWAC)

PWAC is the present worth of all causal costs (including taxes). This evaluator is used to establish the floor price of a service, i.e., the price at which the incumbent company will recover all of its causal costs (including taxes on revenues associated with a rate equal to the floor price itself). In general terms, PWAC is computed by summing up the present worth of expenses, capital expenditures, gross salvage and removal costs, revenue-percent charge, income tax payable associated with the floor price, and other applicable taxes.

b) Annual Equivalent Cost (AEC)

AEC is defined as the uniform, annualized value that is equivalent, on a net present value basis, to all causal costs. The AEC is a continuously compounded, uniformly distributed annuity over the study period using the PWAC as the base amount.

c) Monthly Equivalent Cost (MEC)

MEC represents a uniform dollar value stated on a per-month basis that has a present value equivalent, over the study period, to all incremental costs. Conceptually, this corresponds to the revenue required on a monthly basis to completely offset all causal costs, including capital expenditures, operating expenses, the revenue-percent charge, miscellaneous taxes, and income tax payable resulting from the revenue required to completely offset all causal costs. MEC is conceptually very similar to the AEC measure discussed above, differing only in the period over which the costs are distributed. MEC is equal to the AEC divided by 12. A key application for MEC is in deriving a potential floor price for a service.

d) Present Worth of End-of-Study Value (PWEOS)

As previously discussed, economic studies must reflect the impact of cash flows that extend beyond the end of the study period. The EOS treatment using the DSP approach is described in Appendix C.

e) Present Worth of Demand (PWOD)

For the purposes of performing an imputation test, it is necessary to calculate the PWOD for a study. PWOD is a way of expressing a forecast demand over a study period as a single value at the beginning of the study period. PWOD is used to unitize the corresponding PWAC. The resulting cost per unit of demand reflects the minimum rate of unit of demand required for the service to break even.

f) Present Worth of Revenues (PWRev)

For the purposes of performing an imputation test, it is necessary to calculate the PWRev for a study to allow cash flows occurring at different times over the study period to be analyzed on a comparable basis.

g) Annualized Equivalent Revenue (AER)

AER is defined as the uniform, annualized value that is equivalent, on a net present value basis, to all causal revenues. The AER is a continuously compounded, uniformly distributed annuity over the study period using the PWRev as the base amount.

h) Monthly Equivalent Revenue (MER)

MER is related to the PWRev discussed above. MER is calculated by determining the annual equivalent amount of the continuously compounded, uniformly distributed annuity over the study period that uses the PWRev as the base amount. This amount, divided by 12, represents the MER.

i) Percent Mark-up

The values of the economic evaluators discussed up to this point are all stated in absolute terms, either in total present worth dollars or in dollars paid out over a certain period of time. In many instances it is useful to scale these dollar values to get a sense of the magnitude of net cash flows relative to the PWAC or the percent mark-up. Mark-up is measured as the difference between PWRev and PWAC. The percent mark-up therefore measures the present value of mark-up as a percentage of the PWAC.

3-87 Numerical examples of how these economic evaluators are calculated for each incumbent company are provided in company-specific Appendix X.

3-88 The methodology and algorithms used in the economic evaluation model are described for each incumbent company in company-specific Appendix W.

3.6 Study Report

3-89 The format of the imputation test and study results submitted to the Commission in support of GT filings, competitor service filings, and Type 1 and Type 2 CSA filings is described in Appendix D.

4.0 UPDATES

4.1 Input Update Process

4-1 As discussed in this manual, the incumbent company develops corporate average unit costs and other corporate average information, which can be used to develop the cash flows for regulatory economic studies.

4.1.1 Frequency of Updates

4-2 To determine the frequency of updates for a particular item, the incumbent company considers the following factors:

a) the materiality of the item to the overall development of costs;

b) the cost associated with performing the update; and

c) the degree of variability in the value of the item, e.g., equipment manufacturers' prices are typically stable over the length of the contract.

4-3 The frequency of updates of inputs used in the incumbent company's costing and economic evaluation models for each incumbent company is provided in company-specific Appendix V.

4-4 The incumbent company is required to file updates for approval at the beginning of each year or as significant changes to these inputs occur.

4.2 Regulatory Economic Studies Manual Updates

4-5 The Regulatory Economic Studies Manual will be reviewed by Commission staff and updated as required to reflect changes to the costing methodology and/or new directives from the Commission.

4-6 Updates to the Manual's company-specific appendices will be made and filed with the Commission by the companies, as changes in methodology and/or assumptions occur. Also, an abridged version of these changes/updates will be placed on the public record.

5.0 GLOSSARY OF TERMS

5-1 Appendix F provides the glossary of commonly used terms.

Time Value of Money Formulae

1. The following formulae are used for discrete cash flows:

$$(P/F,i,n) = \frac{1}{(1+i)^n}$$

$$(F/P,i,n) = (1+i)^n$$

$$(P/A,i,n) = \frac{(1+i)^n - 1}{i \times (1+i)^n}$$ (Assumes first cash flow occurs at the end of the first period)

$$(A/P,i,n) = \frac{i \times (1+i)^n}{(1+i)^n - 1}$$ (Assumes first cash flow occurs at the end of the first period)

2. The following formulae are used for continuous cash flows:

$$(P/F',i,n) = \frac{i}{j \times (1+i)^n}$$

$$(F'/P,i,n) = \frac{j \times (1+i)^n}{i}$$

$$(P/A',i,n) = \frac{(1+i)^n - 1}{j \times (1+i)^n}$$

$$(A'/P,i,n) = \frac{j \times (1+i)^n}{(1+i)^n - 1}$$

where:

(P/F,i,n): Present worth factor of a future cash flow n-periods in the future with a discount rate of i% per period. In the case of a continuous future cash flow, the term becomes (P/F',i,n).

(F/P,i,n): Future worth factor of a present cash flow n-periods in the future with a discount rate of i% per period. In the case of a continuous future cash flow, the term becomes (F'/P,i,n).

(P/A,i,n): Present worth factor of an annuity n-periods in length using a discount rate of i%. In the case of an annuity paid on a uniformly distributed, continuously compounded basis, the term becomes (P/A',i,n).

(A/P,i,n): Annuity factor of a present worth taken at the outset of an annuity n-periods in length with a discount rate of i%. In the case of an annuity paid on a uniformly distributed, continuously compounded basis, the term becomes (A'/P,i,n).

$j = \ln(1+i)$

ln = natural logarithm

Capacity Cost Method

1. The capacity cost method is an approach generally used to estimate the causally related costs attributable to an alternative which uses network facilities where spare capacity is a characteristic of those facilities.

Spare Capacity

2. Additions of capacity to many facilities are, for economic or technical reasons, made in increments larger than required by a single service. Because additions are made in anticipation of future requirements, facilities normally have spare capacity. For example, switch additions are generally sized to allow for future line growth.

Determination of Cost of Advancement

3. The introduction of a new service that uses spare capacity advances the requirement for the next addition to capacity. Wherever possible, the cost of this advancement should be assigned to the new service in the associated Phase II cost study.

4. In many cases, it is not practical to calculate the cost of advancement because of the complexity and cost of the associated detailed engineering network study (e.g., identification of a large number of locations, identification of exhaustion dates that are subject to a complex analysis due to other potential services utilizing the same facility). Instead of calculating the cost of advancement, a reasonable approximation of the causal cost is estimated based on the capacity cost approach.

Formula for Capacity Cost

5. The capacity cost of using n units of demand of a facility is given by the following formula:

Capacity Cost = (TC/T) x (1/WFF) x n

Where

TC = total replacement cost of existing facility

T = maximum capacity of the facility

WFF = working fill factor

n = units of demand for new service

6. In developing the working fill factor, matters to be considered include: engineered fill factor; administrative spares (e.g., testing, monitoring and protection) and defective units.

Example

A service uses one pair (n) of an existing 1800 pairs trunk cable (T). The replacement cost (TC) of the cable is estimated to be $180,000. If working fill factor (WWF) of this type of facility is 70 percent, then the capacity cost of using one pair is:

Capacity Cost = (TC/T) x (1/WFF) x n

= ($180,000 / 1800) x (1 / 0.7) x 1

= ($100) x 1.43 x 1

= $143

7. As shown in the above example, the capacity cost apportions the non-service producing capacity (as measured by the working fill factor of 70 percent) to the per unit cost of the service capacity ($180,000 / 1800 = $100 per unit), or $143.

End of Study (EOS) Value – Discounted Service Potential Method

1. The EOS value is calculated using a method referred to as the Discounted Service Potential (DSP) EOS value. The DSP method assumes that for assets whose economic life goes beyond the end of the study period, those assets will continue to be used beyond the end of the study period. The DSP EOS value is calculated based on the assumption that the plant will continue to provide the same level of service over its remaining life for each year following the end of the study period.

2. This constant annual output value (annual resource cost or ARC) is determined by amortizing the capital cost over the useful life of the equipment using the after-tax Weighted Average Cost of Capital (ATWACC).

3. The following diagram depicts the ARC for a capital cash flow occurring at the start of the study period with a life estimate (LE) and a rectangular survivor curve:

Diagram 1

IFC **LE**

ARC	ARC	ARC	ARC	ARC	ARC	ARC	ARC	ARC	ARC

SP

where:

ARC = Annual Resource Cost

IFC = Installed First Cost

LE = Life Estimate of the plant

SP = Study Period

4. The ARC is calculated by amortizing the IFC over a period LE. The rate used in amortizing IFC is based on the after-tax WACC, and the ARC is a continuous annuity of the cost. Mathematically, this would be expressed as follows:

   ARC = (A'/P, i%, LE yrs) * IFC

5. The DSP value represents the EOS value for plant that is expected to continue to provide useful service output (positive service potential) for the ILEC beyond the end of the study. This is measured by taking the present worth (to the end of the study period) of the remaining ARC beyond the end of the study period. Mathematically, this is expressed as follows:

   DSP EOS = (P/A', i%, LE-SP yrs) * ARC

6. The calculation of EOS value is not limited to capital cash flows and can apply to the cash flows for salvage, removal and Income Tax Payable directly related to the capital asset. Economic studies assume these cash flows also result in an ARC based on the LE of the associated capital asset, and thus include an EOS adjustment for each.

Format of the Economic Study Report

1. The economic study report format in this appendix outlines information that is to be provided as per Commission's letters dated 13 June 2005 and 13 May 2005 respectively regarding *Revised Imputation test Guidelines for Type 1 and 2 CSAs* and *Modifications to the General Tariff Economic Study Report Guidelines*.

2. Part A of this appendix provides the layout of the report to be provided for Type 1 and 2 CSA filings.

3. Part B contains a description of the information requirements to be provided for all other service filings.

Part A

Costing Summary Report
for Type 1 and 2 CSA Tariffs

ILEC Name
Imputation Test Report for Type 1 and 2 CSAs

Table 1. CSA Basic Information (Type 1 and 2 CSAs)

Proposed Contract Start Date (yy/mm/dd)	
Proposed Contract End Date (yy/mm/dd)	
Contract Type (New or Amended*)	
Customer Name	
Contract No.	
Tariff Notice (TN) No.	
Pre-introductory Costs and/or Presales design costs ($K)	
Cost of capital	
Financial Parameters & Tax Rates (specify date of last update filed)	

*An imputation test will be required when the following adjustments are proposed in respect of the original or previously-approved contract: (a) change to the remaining contract period length where termination charges have been waived; (b) addition of a new service(s) or feature(s) or cost element(s) that cause the total annualized CSA costs to increase by 5% or more relative to the previous imputation test estimate; and (c) deletion of a service(s) and/or changes to the rate structure or implicit/explicit rate reductions (e.g., waiving of rate elements, change to an existing bonus, addition of a bonus) that cause the total annualized CSA revenues to decrease by 2% or more relative to the previous imputation test estimate if the previous imputation test has a mark-up of less than 10%, or decrease by 5% or more relative to the previous imputation test estimate if the previous imputation test has a mark-up of 10% or more.

Amendments are to be described in the covering letter. Furthermore, in the event that the remaining contract period length is revised and the waiver of the approved termination charge(s) is proposed, the company shall identify the termination charge(s) it proposes to waive, with supporting rationale. Also specify date and tariff notice number of previous contract.

Table 2. CSA Imputation Test Results (Type 1 and 2 CSAs)

Contract No.	Current Year $ (2NNN)									
	PW ($K)	PWAC ($K)					PW ($K)	%	($K)	($K)
	CSA Revenues (Estimate)	General tariffed services (Imputed at tariff)	Forborne services and other components (Phase II costs)*	3rd party services (Acquisition costs)	Competitor services (Imputed at tariff)	Total CSA PWAC	Difference	Mark-up	Annualized Revenue (Estimate)	Annualized Costs (Estimate)
	(a)	(b)	(c)	(d)	(e)	(f) = b + c + d + e	(g) = a - f	(h) = g / f	(Note 1)	(Note 1)

* Includes costs of forborne services, and other service components and/or functionalities that are not forborne, not GT, not Competitor services nor 3rd party services. In the case of Type 1 CSAs, Category II Competitor services are included at their Phase II costs.

Note 1: Table entry reflects items (a) and (f) annualized over the length of the contract. These columns are not required for Type 1 CSAs.

Table 3. CSA Demand (Type 2 CSAs only)*

Service	Service Type**	Primary Demand Driver ***	Yr 0****	Yr 1	Yr 2	Yr 3	Yr 4	…	PW Demand
Service 1									
Service 2									
Service 3									
Service 4									
…..									
Add more rows/ columns as required									
Other (specify)									
Other (specify)									

* Provide the annual year end in-service demand for the primary demand driver over the study period for each major service. A major service is defined as one where the costs or imputed tariffs are greater than 5% of the Total CSA PWAC (as per Table 2). The PW Demand is calculated to reflect the number of months in each year of the contract.
** Service types are based on the methodology used to develop the costs associated with the service and are defined as follows:

Service Type	Description
GT	General tariffed (GT) services, excluding Category I and II Competitor services, available under any of the ILEC's tariffs and costed by imputing the applicable tariff rates.
Phase II	Forborne services, and other service components/functionalities that are not GT, not forborne, not Competitor Services, nor 3rd-party services.
3rd Party	Major services acquired from 3rd parties.
Competitor Services	Category I and II Competitor services which are costed by imputing the applicable tariffed rates.

*** Specify the primary demand driver by service, such as, for example, Network Access Service (NAS) for Business Primary Exchange Service (PES).

**** Yr 0: Existing in-service demand at the beginning of the contract, if applicable.

Table 4. Annual and Present Worth of Revenues ($K) (Type 2 CSAs only)

	PW of CSA Revenues	**Annual Revenues**				
		Yr 0*	Yr 1	Yr 2	Yr 3	…
Revenues (Note 1)	**(a)**					

* Yr 0: One-time revenue at the beginning of the contract, for example, service charges or installation charges.

Note 1. Total CSA revenues reflect total of one-time charges plus recurring revenues less bonus, if applicable.

Table 5. Present Worth of Costs ($K) (Type 2 CSAs only)

	Cost Category	Total Costs	Imputed GT Service(s)		Phase II and Other Costs		
			Major GT Service(s)	Other GT Services	Major Forborne Service(s)	3rd-Party Services	Other
			(Note 1)	(Note 2)	(Note 3)	(Note 4)	(Note 5)
1.0	**Costs: Imputed Tariffs for GT Services**	**(b)**	x	x	x		x
2.0	**Phase II and Other Costs**						
	2.1 Capital				x		x
	2.2 Maintenance				x		x
	2.3 Service Provisioning				x		x
	2.4 Sales Management & Advertising				x		x
	2.5 Billing				x		x
	2.6 Portfolio Costs				x		x
	2.7 Other Expenses (Note 6)				x		x
	2.8 Contract Specific Expenses (Note 7)						x
	2.9 Contract Credits/Penalty Cost (Note 8)						x
	Total Phase II and Other Costs	**(c)**			x		x
3.0	**Costs: Imputed Tariffs for Competitor services** (Note 9)	**(e)**			x		x
4.0	**Total CSA PWAC**	**(f) = b + c + d + e**	x	x	x	**(d)**	x

Note 1 Costs associated with each major GT service (determined by imputing the applicable tariffed rates) are to be provided in separate columns, by speed if applicable. A major service is defined as one where the total present worth of imputed tariffs is more than 5% of the Total CSA PWAC; the note should identify each major GT service.

Note 2 'Other GT Services' includes each GT service for which the present worth of imputed tariffs is less than 5% of the Total CSA PWAC; the note should list each service.

Note 3 Costs associated with each major forborne service are to be provided in separate columns, by speed if applicable. A major forborne service is defined as one where that service's total PWAC, including the associated retail digital network access (DNA) or Competitor services imputed at tariff, is more than 5% of the Total CSA PWAC; the note should identify each major forborne service.

Note 4 Acquisition costs for 3rd-party services; the note should identify and describe each service acquired from 3rd-parties, describe the method used to develop the costs if applicable, and provide a breakdown of the costs by major 3rd-party service. A major 3rd-party service is defined as one where the total present worth of acquisition costs is more than 5% of the Total CSA PWAC.

Note 5 'Other' includes the following components: (a) forborne services for which the PWAC costs (including the associated retail DNA or Competitor services imputed at tariff) are less than 5% of the Total CSA PWAC, and (b) other components and/or functionalities that are not GT, not forborne, not Competitor services, nor 3rd-party services; the note should identify and describe each of these services.

Note 6 The note should provide a breakdown of Other expenses by major activity by service and specify the nature of each major activity.

Note 7 Include contract-specific costs causal to the CSA (identify separately the unrecovered costs causal to the CSA of the previous imputation test, if any, in the case of an amended contract): specify nature of costs.

Note 8 Specify nature of costs (for example, Service Level Commitments) by service, if applicable, and the methodology used to develop the costs (refer to Table 7 re. service level commitments and performance penalties)

Note 9 Include the costs for all Category I and II Competitor Services at the applicable tariffed rates under the relevant column. If the customer is a competitor and the Type 2 CSA includes a forborne service that is used with a digital network access facility (e.g., WAN), then the competitor digital network (CDN) tariffed rate should be imputed and shown in the cost category line "3.0 Costs: Imputed Tariffs for Competitor Services". Otherwise, the retail DNA tariffed rate should be imputed and shown in the cost category line "1.0 Costs: Imputed Tariffs for GT Services". In all cases, specify the imputed rate elements by service (consistent with paragraph 73 of Telecom Decision CRTC 2003-63).

Add more columns/rows, as required.

Table 6. Monthly Cost per Unit of Demand (Note 1) (Type 2 CSAs only)

		Total Costs	Imputed GT Services		Phase II and Other Costs		
	Cost Category		**Major GT Service(s)**	**Other GT Services**	**Major Forborne Service(s)***	**3rd-Party Services*** (Note 1)	**Other****
1.0	**Costs: Imputed Tariffs for GT Services**		x	x	x		x
2.0	**Phase II and Other Costs**				x		x
	2.1 Capital				x		x
	2.2 Maintenance				x		x
	2.3 Service Provisioning				x		x
	2.4 Sales Management & Advertising				x		x
	2.5 Billing				x		x
	2.6 Portfolio Costs				x		x
	2.7 Other Expenses				x		x
	2.8 Contract Specific Expenses						x
	2.9 Contract Credits/Penalty Cost						x
	Total Phase II and Other Costs				x		x
3.0	**Costs: Imputed Tariffs for Competitor services**				x		x
4.0	**Total CSA PWAC**				x	x	x

* Monthly cost provided using primary demand driver.

** Monthly cost provided only if a primary demand driver is common to the CSA.

Note 1: Monthly Cost per Unit of Demand = PW Costs from Table 5 / Present Worth of Primary Demand Driver.

Add more columns/rows, as required.

Table 7. 18 July 2003[1] and Other CRTC Costing Methodology Directives

1. For the services which are provided at the outset of the contract, the monthly equivalent costs (MECs) are developed assuming that the capital cash flows are one-time.

2. The following average working fill factors are applied: 80% for CO equipment, and 70% for outside plant equipment.

3. Contract-specific unit expenses should be used; where corporate average unit expenses are used, a 25% mark-up is applied.

4. If costs for non-standard service level commitments and performance penalties cannot be determined, include 1% of the applicable service component revenue as a cost proxy.

5. Apply the appropriate VCC and portfolio expense loading factors.

6. If costs for Category I service components (imputed at tariff) cannot be determined, apply a 15% mark-up to the Phase II cost of the equivalent service functionality/component.

7. If costs for Category II service components (imputed at tariff) cannot be determined, apply a 25% mark-up to the Phase II cost of the equivalent service functionality/component.

[1] Items 1 to 4 relate to costing methodology specifications for Bell Canada only, consistent with Commission staff letter dated 18 July 2003 regarding customer specific arrangements.

Part B

Report

on the

Economic Evaluation

of

the Introduction/Tariff Revision

of

General Tariffed (GT) Service (specify)

or

GT Service Bundle (specify)

or

Competitor Service (specify)

1.0 GENERAL

1.1 Purpose of the Study

1. Details on the purpose of the cost study are to be provided. For instance, this section should identify if the study is in support of a general tariffed (GT) service introduction, a GT service bundle introduction, a Competitor service introduction, or a change to an existing GT service or GT service bundle such as the introduction of a new feature or a modification to the rate structure.

2. Details on the marketing rationale are to be provided.

3. If the changes to an existing service (GT, GT service bundle, or Competitor service) are straight-forward changes to the existing rates, sections 2 and sub-section 3.2 below may be omitted. Furthermore, in accordance with the Commission's letter dated 27 November 1998 re: *The imputation test methodology for local services (*the November 1998 Commission letter), the economic study report is not required for an implicit or explicit rate increase of an existing GT service. However in such instance, the application should provide a detailed description of the initiative and the tariff revisions, and provide an estimate of the overall weighted average price change based on the demand associated with the service proposal. Such information can be provided in the tariff application filing letter.

2.0 SERVICE DESCRIPTION

4. In the case of a new GT service, a new GT service bundle, a new Competitor service or a new tariff element of an existing GT service, a general description of the service/tariff element being introduced is to be provided.

5. In the case of a revision to an existing service, a detailed description of the initiative is to be provided.

2.1 Service Characteristics

6. Details about the service being introduced are to be provided. This may include, for example, services being bundled (if applicable), specific functionalities, customer eligibility, contract options, network requirements, and any other information that provides a clear understanding of the service/tariff element being introduced. Diagrams of the network elements included in the proposed service and their interconnection are to be provided if they enhance the understanding of the service/tariff element.

2.2 Service Benefits

7. Details about the benefits that customers will realize when they subscribe to the new service/tariff element(s) are to be provided.

2.3 Marketing Considerations

8. Details about the target market for the new service/tariff element(s) or rate change(s) are to be provided.

3.0 TARIFF CONSIDERATIONS

3.1 Tariff Components

9. In the case of a new GT service, a new GT service bundle, a new Competitor service or a revision to an existing service, the proposed rates and charges by major tariff component are to be provided.

Tariff Components	Recurring Rates	One-time Charges
• Component 1 (specify)	(e.g., monthly)	(e.g., service charges or admin. fees)
• Component 2 (specify)		

3.2 Rate Determination Principles

10. Rationale for the rates being proposed is to be described in this section. This could include, for instance, statements related to pricing relative to alternative offerings. References to any regulatory directives pertaining to price levels are to be provided in this section.

3.3 Proposed Service Commencement Date

11. The proposed launch date for the new service/tariff element(s) or revised service is to be provided.

4.0 IMPUTATION TEST

12. An imputation test is to be filed with all tariff applications involving the introduction of a new GT service, a new GT service bundle, a new Competitor service and/or new service features of an existing GT service, or an implicit or explicit price decrease of an existing GT service. The imputation test must be filed in accordance with the imputation test methodology as set out in the November 1998 Commission letter and the Commission's letter dated 5 January 2001 re: D*ecision CRTC 2000-150 SaskTel - Transition to Federal Regulation Imputation Test Methodology.* These decisions were subsequently amended by *Issues related to imputation test methodology - Rebanding decision follow-up,* Decision CRTC 2001-737, 29 November 2001, and *Review of price floor safeguards for retail tariffed services and related issues,* Telecom Decision CRTC 2005-27, 29 April 2005 (Decision 2005-27), and other relevant decisions or orders.[1]

[1] Other decisions or orders pertaining to the imputation test methodology include *Review of regulatory framework – Targeted pricing, anti-competitive pricing and imputation test for telephone company toll filings*, Telecom Decision CRTC 94-13, 13 July 1994; *Review of regulatory framework*, Telecom Decision CRTC 94-19, 16 September 1994 (Decision 94-19); the Commission's letter dated 15 December 1994 re: *Stentor Resource Centre Inc. Proposal on the information requirements for service filings (post Telecom Decision CRTC 94-19*) - subsequently approved on an interim basis on 16 January 1995; *Local competition*, Telecom Decision CRTC 97-8, 1 May 1997 (Decision 97-8); *Joint marketing and bundling*, Telecom Decision CRTC 98-4, 24 March 1998; and *Bell Canada – Introduction of dedicated access services,* Order CRTC 2001-616, 2 August 2001.

13. Note that in accordance with Telecom Order CRTC 90-779, 24 July 1990, the filing of an imputation test is not required for a new service expected to have ten or fewer subscribers and a total monthly charge of less than $2000 or the equivalent thereof. Furthermore, in accordance with the November 1998 Commission letter, an imputation test is not required for an implicit or explicit rate increase of an existing GT service.

14. The results of the imputation test for the GT service are to be provided in this section. The total present worth of revenues and costs within the study period and the revenue and cost per unit are to be provided. Two formats are illustrated, one for GT (stand-alone) services (refer to Tables 1 and 2 below), and one for GT service bundles (refer to Tables 3 and 4 below). A further breakdown of the Phase II cost component is to be provided by major expense and capital category in the Detailed Summary of Phase II Costs table (refer to Table 7 below). In the case of a GT service bundle, the Detailed Summary of Phase II Costs table is to be provided separately for each major service component within the bundle, whether forborne or not, that represents more than 10 percent of the total service cost, and for the costs causal to the service bundle. It is noted that the tables of this report may be provided as EXCEL attachments to the report.

15. In the exceptional situations where providing revenue and costs per unit is not appropriate, rationale is to be provided.

16. For local exchange services or service bundles that include local exchange services, the imputation test is to be provided at the rate band level. Further, if the service/tariff element(s) being introduced or revised is offered only in specific rate bands, then the imputation test is to be provided for the rate bands being affected by the introduction or revision of the service/tariff element.

17. If the service contains rates differentiated by market segment and/or technology, then the imputation test is to be provided for each distinct market segment and/or technology (e.g. by service speed, residential or business).

18. If the service requires the company to acquire services from third parties, then these acquisition costs and the associated demand are to be shown separately.

19. If the service contains rates that are based on volume or length of the contract period, the lowest per unit rate element in the volume/contract period tariff grid is to be identified and an imputation test is to be provided for the lowest per unit rate element in the volume/contract period tariff grid in each rate band (refer to Table 2A below).

Table 1

Imputation Test Format for GT Service (specify)

Total Present Worth of Revenues and Cost within Study Period

(20NN$)

	Present Worth of						
	Revenue	Phase II Costs	Category I Competitor Services (Imputed at Tariff)	3rd party services (Acquisition Costs)	Total Costs	Difference	% Mark-up
	($K or M) (a) (Note 1)	($K or M) (b) (Note 2)	($K or M) (c) (Note 3)	($K or M) (d) (Note 4)	($K or M) (e) = b+c+d (Note 5)	($K or M) (f) = a - e (Note 5)	(%) = f/e
Service*							
OR							
Band A*							
Band B*							
Band C*							
Band D*							
Band E*							
Band F*							
Band G*							
Costs Causal to Service							
Total for Service (Note 5)							

* Includes costs causal to demand of service **or** costs causal to demand by rate band for local exchange services.

Notes:

1) Reflects the average total service revenue per unit (specify) per month.
2) Includes costs for all service components other than: Category I competitor services (or equivalent service functionalities), excluding cross-effects as per Telecom Decision CRTC 94-19, and including the costs of incorporating the acquired 3rd-party services as part of the service.
3) Category I competitor services as set out in Appendix 1 of *Regulatory Framework for Second Price Cap Period*, Telecom Decision CRTC 2002-34, 30 May 2002, and any relevant subsequent decisions or orders regarding Category I competitor services (e.g., CDN DS-0 and DS-1 accesses).
4) Costs of services acquired from 3rd parties.
5) Totals may not balance due to rounding.

Table 2
Imputation Test Format for GT Service (specify)
Revenue & Cost per Unit per month
(20NN $)

	Revenue	Phase II Costs	Category I Competitor Services (Imputed at Tariff)	3rd party (Acquisition Costs)	Total Costs	Difference	% Mark-up
	$ per unit per month	$ per unit per month	$ per unit per month	$ per unit per month	$ per unit per month	$ per unit per month	(%)
	(Note 1)	(Note 2)	(Note 3)	(Note 4)	(Note 5)	(Note 5)	
Service*							
OR							
Band A*							
Band B*							
Band C*							
Band D*							
Band E*							
Band F*							
Band G*							
Costs Causal to Service							
Total for Service (Note 5)							

* Includes costs causal to demand of service **or** costs causal to demand by rate band for local exchange services.

Notes:

1) Reflects the average total service revenue per unit (specify) per month.
2) Includes costs for all service components other than Category I competitor services (or equivalent service functionalities), excluding cross-effects as per Telecom Decision CRTC 94-19, and including the costs of incorporating the acquired 3rd-party services as part of the service.
3) Category I competitor services are to be imputed at the applicable tariffed rates. The list of Category I competitor services is provided in Appendix 1 of *Regulatory Framework for Second Price Cap Period*, Telecom Decision CRTC 2002-34, 30 May 2002, as amended due to any relevant subsequent decisions or orders regarding Category I Competitor services (e.g., CDN DS-0 and DS-1 accesses).
4) Costs of services acquired from 3rd parties.
5) Totals may not balance due to rounding.

Table 2a

Imputation Test Format for Service Element offered at Term and Volume Contracts

Revenue & Cost per Unit per month

for the Lowest Per Unit Rate element in the Volume/Contract Period Tariff Grid (20NN $)

	Revenue	Phase II Costs	Category I Competitor Services at Tariff	3rd-Party Acquisition Costs	Total Costs	Difference	% Mark-up
	$ per unit per month (Note 1)	$ per unit per month (Note 2)	$ per unit per month (Note 3)	$ per unit per month (Note 4)	$ per unit per month (Note 5)	$ per unit per month (Note 5)	%
Service rate element a							
OR							
Band A rate element a							
Band B rate element b							
Band C rate element c							
Band D rate element d							
Band E rate element e							
Band F rate element f							
Band G rate element g							

Notes:

1) Reflects the average total service revenue per unit (specify) per month at the lowest rate (specify).
2) Includes costs for all service components other than: Category I competitor services (or equivalent service functionalities), excluding cross-effects as per Telecom Decision CRTC 94-19, and including the costs of incorporating the acquired 3rd-party services as part of the service.
3) Category I competitor services are to be imputed at the applicable tariffed rates. The list of Category I competitor services is provided in Appendix 1 of *Regulatory Framework for Second Price Cap Period*, Telecom Decision CRTC 2002-34, 30 May 2002, as amended due to any relevant subsequent decisions or orders regarding Category I Competitor services (e.g., CDN DS-0 and DS-1 accesses).
4) Costs of services acquired from 3rd-parties.
5) Totals may not balance due to rounding.

Table 3

Imputation Test Format of GT Service Bundle (specify)

Total Present Worth of Revenues & Cost within the Study Period

	Revenue	Phase II & Other Costs				Imputed Elements		Total Costs		
		Major component(s)	Other components	Major Acquired Service(s)	Other Acquired Services	Category I Competitor Service(s) at Tariff	Other Elements Imputed at Tariff			
	($M) (Note 1)	($M) (Notes 2,3)	($M) (Notes 2,4)	($M) (Note 5)	($M) (Note 6)	($M) (Note 7)	($M) (Note 8)	($M) (Notes 9,10)	($M) (Note 10)	(%)
Bundle*										
OR										
Band A*										
Band B*										
Band C*										
Band D*										
Band E*										
Band F*										
Band G*										
Costs Causal to Bundle										
Total for Bundle (Note 10)										

*: Includes costs causal to demand of service bundle **or** costs causal to demand by rate band for service bundles that contain local exchange services

Notes:

1) Reflects the total service bundle revenue.
2) Includes costs for all service components other than acquisition costs and costs for Category I competitor services (or equivalent service functionalities) and other elements imputed at the applicable tariffed rates; also includes costs associated with incorporating the acquired 3rd-party services as part of the service bundle. These costs are to exclude cross-effects as per Telecom Decision CRTC 94-19.
3) Costs associated with each major service component (whether forborne or not) representing more than 10% of the total service bundle cost are to be provided in a separate column; a detailed cost summary is to be provided using the format of Table 7.
4) Other components should include each service component for which the cost is less than 10% of the total service bundle cost. The note should list these service components.
5) Acquisition costs of major acquired services (a major acquired service is defined as one where the acquisition cost represents more than 10% of the total service bundle cost). The table entry provides the total costs of these services.

6) Acquisition costs of services, other than those covered in note 4 that are acquired from third parties and included in the bundle. The table entry provides the total costs of these services.
7) Category I competitor services are to be imputed at the applicable tariffed rates. The list of Category I competitor services is provided in Appendix 1 of *Regulatory Framework for Second Price Cap Period*, Telecom Decision CRTC 2002-34, 30 May 2002, as amended due to any relevant subsequent decisions or orders regarding Category I Competitor services (e.g., CDN DS-0 and DS-1 accesses).
8) Residential local exchange services, in-territory residential local VoIP services, and non-forborne interexchange private line (IXPL) service elements are to be imputed at tariffs.
9) Costs causal to the service bundle are to be reported in the Total Costs column; a detailed cost summary is to be provided using the format of Table 7.
10) Totals may not balance due to rounding.

Table 4

Imputation Test Format of GT Service Bundle (specify)

Revenues & Cost per Bundle

(20NN $)

	Revenue	Phase II & Other Costs				Imputed Elements		Total Costs	Difference	% Mark-up
		Major Components	Other Components	Major Acquired Service	Other Acquired Services	Category I Competitor Services Imputed at Tariff	Other Elements Imputed at Tariff			
	$ per unit per month (Note 1)	$ per unit per month (Notes 2, 3)	$ per unit per month (Note 4)	$ per unit per month (Note 5)	$ per unit per month (Note 6)	$ per unit per month (Note 7)	$ per unit per month (Note 8)	$ per unit per month (Notes 9, 10)	$ per unit per month (Note 10)	%
Bundle*										
OR										
Band A*										
Band B*										
Band C*										
Band D*										
Band E*										
Band F*										
Band G*										
Costs Causal to Bundle										
Bundle Total (Note 10)										

*: Includes costs causal to demand of service bundle **or** costs causal to demand by rate band for service bundles that contain local exchange services.

Notes:

1) Reflects the average total service revenue per unit (specify) per month.
2) Includes costs for all service components other than acquisition costs and costs for Category I competitor services (or equivalent service functionalities) and other elements imputed at the applicable tariffed rates; also includes costs associated with incorporating the acquired 3rd-party services as part of the service bundle. These costs are to exclude cross-effects as per Telecom Decision CRTC 94-19.
3) Costs associated with each major service component (whether forborne or not) representing more than 10% of the total service bundle cost are to be provided in a separate column; a detailed cost summary is to be provided using the format of Table 7.

4) Other components should include each service component for which the cost is less than 10% of the total service bundle cost. The note should list the services and each services' percentage of the total costs.
5) Acquisition costs of major acquired services (a major acquired service is defined as one where the acquisition cost represents more than 10% of the total service bundle cost). The table entry provides the total costs of these services.
6) Acquisition costs of services, other than those covered in note 4 that are acquired from third parties and included in the bundle. The table entry provides the total costs of these services.
7) Category I competitor services are to be imputed at the applicable tariffed rates. The list of Category I competitor services is provided in Appendix 1 of *Regulatory Framework for Second Price Cap Period*, Telecom Decision CRTC 2002-34, 30 May 2002, as amended due to any relevant subsequent decisions or orders regarding Category I Competitor services (e.g., CDN DS-0 and DS-1 accesses).
8) Residential local exchange services, in-territory residential local VoIP services, and non-forborne IXPL service elements are to be imputed at tariffs.
9) Costs causal to the service bundle are to be reported in the Total Costs column; a detailed cost summary is to be provided using the format of Table 7.
10) Totals may not balance due to rounding.

5.0 DEMAND AND REVENUE INFORMATION

5.1 Forecast Assumptions and Methodology

23. Information is to be provided on how the demand forecasts were developed for the units of the service's major demand driver(s) and for the units of demand for the new tariff element(s). This information may include a description of the methods and information used to estimate demand; for example, databases and/or models used, market research, and assumptions as well as the supporting rationale for the methodology(ies) of choice.

5.2 Estimates of Demand Quantities

24. The estimated demand quantities of year-end or annual units of the major demand driver(s) used to develop revenues and costs of the proposed GT service or service bundle are to be provided (see Table 5 below). These may include the units of demand of the major service component(s), the units of demand for the new tariff element, the units of demand for each third-party component and/or each Category I competitor service component and/or other elements imputed at tariff.

Table 5

Year-end or Annual demand estimates (Specify)

Services (Specify)	**Yr 0****	**Yr 1**	**Yr 2**	**Yr 3**	**Yr SP*****	**PWOD******
Major service component(s)						
Other demand drivers*						

*Other demand drivers may include: major 3rd-party component(s), Category I competitor service component(s), and components imputed at tariff where a major component is defined as one with a cost or imputed cost representing more than 10% of the total service bundle cost.

** Yr 0 : In-service demand at time 0 for existing services

*** SP : Last year in the study period (SP)

**** PWOD: Present worth of demand

25. For those services for which an All Carriers approach[3] services is required, annual year-end demand forecasts are to be provided for ILECs and competitors, separately.

26. For local exchange services or service bundles that include local exchange services, demand by rate band is to be provided.

[3] A costing approach whereby the average unit cost is established based on the combined ILEC and competitor demand.

6.0 PHASE II COSTS

27. The Phase II costs are to be determined in accordance with the Phase II costing principles set out in *Inquiry into Telecommunications Carriers' Costing and Accounting Procedures – Phase II: Information Requirements for New Service Tariffs Filings*, Telecom Decision CRTC 79-16, 28 August 1979 (Decision 79-16), excluding cross-effects as per Decision 94-19, and as amended by subsequent Commission decisions.[4]

28. Pre-introduction costs associated with this service proposal are $_____.

6.1 Study Assumptions

29. Specific study assumptions are to be provided (including retrospective capital increase factors, expense increase factors and productivity improvement factors, and the vintages of unit cost data used).

6.2 Study Period

30. The study period is to be noted in this section by stating the month and year of the start of the period and the end of the period.

6.3 Financial Parameters and Tax Rates

31. The financial parameters and tax rates used in the study are provided in Table 6 below.

Table 6
Financial Parameters and Tax Rates

Cost of Capital:
Cost of Debt:
Debt Ratio:
Return on Common Equity:
Variable Common Cost Factor:
Income Tax Rate:
Capital Miscellaneous Tax Rate:
Large Corporation Tax Rate:
Revenue-Percent Charge Rate:
Other Tax Rates (e.g., Quebec Telecommunications Tax):
Portfolio Loading Factor:

These parameters and tax rates were filed with the Commission on: (day, month, year).

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[4] *Bell Canada – Costing of Interoffice Fibre Cable*, Telecom Letter Decision CRTC 93-1, 27 January 1993 (regarding the costing of interoffice fibre cable based on fibre cost factors); *Final Rates for Unbundled Local Network Components*, Telecom Decision CRTC 98-22, 30 November 1998 (regarding the end-of-study terminal value calculation); *Restructured bands, revised loop rates and related issues*, Decision CRTC 2001-238, 27 April 2001 (regarding the costing of percent revenue charge costs); and *Competitor Digital Network Services*, Telecom Decision CRTC 2005-6, 3 February 2005 (regarding the costing of portfolio expenses).

6.4 Cost Inclusions

32. Detailed descriptions of the cost inclusions in each category are to be provided in the sections below.

6.4.1 Expenses Causal to the Service

33. Information on the expenses and the methodology used to develop the expenses are to be provided.

34. Expenses causal to the service, also known as non-demand variable expenses, are to be provided for each of the following expense categories:

– Advertising and Promotion

  Information on the one-time and ongoing costs specific to the service, such as newspaper, television and web-based advertising campaigns and bill inserts, is to be provided.

– Billing-related

  Information on the one-time and ongoing costs associated with billing the service, such as development, implementation, and changes to methods and procedures, is to be provided.

– Other

  Information on any one-time and ongoing costs associated with other operational impacts, such as project management or product management, is to be provided.

  The costs are to be provided separately for each major component in a footnote. Also include a description for each major component.

6.4.2 Capital Causal to the Service

35. Information on the capital and the methodology used to develop the capital are to be provided. Additionally, it should be indicated where costs are derived from corporate averages.

36. Capital causal to the service, also known as non-demand variable capital, is to be provided using the following cost categories:

– Hardware

  Information on the one-time and ongoing hardware costs specific to the service, such as the purchase of intelligent peripherals, is to be provided.

– Software

  Information on the one-time and ongoing capitalized software costs specific to the service, such as the purchase, development, modification, software upgrades and implementation of software applications, is to be provided.

6.4.3 Capital Causal to Demand

37. Information on the capital costs and the methodology used to develop them is to be provided. Additionally, it should be indicated where costs are derived from corporate averages.

38. Capital causal to demand is to be provided for each of the following four cost categories:

– Outside Plant Equipment

  This cost category includes the one-time and ongoing costs associated with copper and fibre cables, copper protectors, poles, and conduit. In cases where costs associated with other types of outside plant equipment are included, a description of the equipment is to be provided.

– Switching Equipment

  This cost category includes the one-time and ongoing costs associated with switches (e.g. digital multiplexing system (DMS)) equipment and associated power, routers, media gateways) and switching application software. In cases where costs associated with other types of switching equipment are included, a description of the equipment is to be provided.

– Transmission Equipment

  This cost category includes the one-time and ongoing costs associated with electronic equipment used for the various modes of digital and analogue transmission (e.g. remotes, inter-office trunks) and any associated application software. In cases where costs associated with other types of transmission equipment are included, a description of the equipment is to be provided.

– Land, Building & Other

  This cost category includes the one-time and ongoing costs associated with land, buildings, towers, adjunct network associated with Operating Support System, outside service wire, and other costs not categorized under Outside Plant Equipment, Switching Equipment, or Transmission Equipment. In cases where costs associated with other types of capital are included, a description of the capital is to be provided.

6.4.4 Expenses Causal to Demand

39. Information on the expenses and the methodology used to develop the expenses are to be provided. Additionally, it should be indicated where costs are derived from corporate averages. The costs of incorporating the acquired 3rd-party services into the service are to be included in the appropriate Expenses Causal to Demand cost category.

40. Expenses causal to demand are to be provided for each of the following five expense categories:

– Maintenance

Maintenance includes the one-time and ongoing costs associated with the maintenance (e.g. rearrangements, preventative maintenance, power, and maintenance contracts) and repair (e.g. receiving trouble calls, testing and dispatching troubles, repairs and shop repair) of the described capital equipment as well as the costs associated with the ongoing technical and administrative support, training, and IS/IT activities.

If the maintenance expense is included in the capital costs, a note stating this is to be provided. In cases where other types of maintenance expenses are included, a description of these expenses is to be provided.

– Service Provisioning

Service Provisioning includes the one-time and ongoing costs associated with operator and directory services, business office activities, help-desk services, service order execution, circuit rentals and licensing fees, as well as the costs associated with the ongoing technical and administrative support, training, and IS/IT activities.

In cases where other types of service provisioning expenses are included, a description of these expenses is to be provided.

– Advertising & Sales Management

Advertising includes the one-time and ongoing costs associated with advertising and promotional activities as well as the associated ongoing administrative support activities. Sales management includes the one-time and ongoing costs associated with sales, as well as the associated ongoing administrative support activities.

In cases where other types of sales management expenses are included, a description of these expenses is to be provided.

– Billing

Billing includes the one-time and ongoing costs associated with billing and collection, as well as the associated ongoing administrative support activities.

In cases where other types of billing expenses are included (e.g. third-party billing), a description of these expenses is to be provided.

– Other

"Other" includes other miscellaneous expenses such as one-time and ongoing costs associated with logistics and other activities not included in Maintenance, Service Provisioning, Advertising & Sales Management, or Billing. Information about the other activities is to be provided. This category may include the percent revenue charge costs and portfolio expenses in cases where such costs are determined separately.

The costs are to be provided separately for each major component in a footnote. Also include a description of each major component.

6.4.5 Phase II Cost Summary

41. The table entitled Detailed Summary of Phase II Costs is provided in Table 7 below and reports the Phase II costs excluding acquisition costs and excluding costs associated with elements imputed at tariff.

42. For a GT stand-alone service, the following information is to be provided:

– In the case of local exchange services, a Detailed Summary of Phase II Costs table is to be provided for each market segment and/or rate band for which an imputation test has been provided, and a Detailed Summary of Phase II Costs table for costs causal to the service is to be provided separately and not by band unless these costs are band-specific.

– In the case of non-local exchange services, a Detailed Summary of Phase II Costs table is to be provided for the total service for each market segment.

43. For a GT service bundle, the following information is to be provided:

– For each service within the bundle that includes local exchange services, a Detailed Summary of Phase II Costs table is to be provided for each market segment and/or rate band for which an imputation test has been provided, and a Detailed Summary of Phase II Costs table for bundle-specific costs is to be provided separately and not by band.

– Further, individual Detailed Summary of Phase II Costs tables are to be provided for each forborne and/or non-forborne service component within the bundle whose cost is greater than or equal to 10% of the total Phase II cost for the service bundle by market segment, as well as a Summary of Phase II Costs table for the costs causal to the service bundle.

Table 7

GT Service (specify)* or

GT Service Bundle Component (specify)*

Detailed Summary of Phase II Costs

(20NN $)

	Present Worth within Study Period	**$ per unit** per month**
Total Costs (PWACs):		
Expenses causal to the service		
Advertising and Promotion		
Billing-Related		
Other		
Capital causal to the service		
Hardware		
Software		
Capital causal to demand		
Outside Plant Equipment		
Switching Equipment		
Transmission Equipment		
Land, Building & Other		
Expenses causal to demand		
Maintenance		
Service Provisioning		
Advertising & Sales Management		
Billing		
Other		
Other (optional: specify)		
Present Worth of Major Demand Units		
Present Worth of End of Study Value (included in the PWAC)		

Notes:

1) Totals may not balance due to rounding.
2) Values represent Phase II costs excluding acquisition costs and all costs associated with elements imputed at tariff.

* This table is to be provided by rate band for: local exchange services or service bundles that contain local exchange services.

** Specify the unit, such as, for example, Network Access Service (NAS), minute, or access.

7.0 3rd PARTY ACQUISITION COSTS AND COSTS OF IMPUTED ELEMENTS

44. This section should identify and describe the service(s) acquired from third parties, and the method used to develop these costs. This section should further provide the present worth of acquisition costs associated with each major acquired service (a major acquired service is defined as one with an acquisition cost representing more than 10% of the total service cost or service bundle cost). Settlements with other Telcos are to be included as part of the 3rd-party acquisition costs.

45. This section should identify the service(s) or service components that are costed by imputing the applicable tariffed rates (e.g., Category I Competitor Services, Residential local exchange services, in-territory residential local VOIP services, non-forborne IXPL service elements) and the method used to develop these costs. This section should further provide the present worth of imputed costs associated with each major imputed tariff (a major imputed tariff is defined as one with imputed cost representing more than 10% of the total service cost or service bundle cost).

Resource Cost Study

A Resource Cost study establishes a costing benchmark against which proposed rates can be evaluated. A proposed annual rate equal to the annual equivalent cost (AEC) would be the rate at which the Company exactly meets its revenue requirement. At this rate all causal costs are recovered including repayments and return on capital.

In a Resource Cost study the calculations of the AEC involves identifying the cost cash flows causal to the demand growth of a single unit of equipment (or a typical configuration of equipment, such as a Private Branch Exchange (PBX) over the life of that equipment. These cash flows are converted from their time of occurrence to an equivalent one time amount at the start of the study. This quantity is referred to as the Present Worth of Annual Cost (PWAC). The AEC is then established by expressing this present worth amount (PWAC) as an equivalent continuous annuity over a forward looking time frame (typically the investment's life estimate or the proposal's study period). Included in these cost cash flows is income tax payable which is calculated under the assumption that revenues are equal to costs. Other costs include capital, expense and net salvage of the capital costs.

Capital and expense increase factors are included in Resource Cost studies when the results are to be used to establish rates for a multi-year period. When the Resource Cost study is intended for a cost/revenue comparison or for rate setting in a single year, cost and expense increase factors are not included.

Resource Cost studies employ the following simplifying assumptions:

1. Revenues are excluded.

2. The equipment used to provision for demand growth is assumed to be utilized for its entire life estimate (i.e., the demand growth is sustained or the equipment is fungible).

3. Costs are based on a one-time demand increase.

4. Income tax payable is calculated on the basis of the revenue requirement assumption.

Resource Cost studies are suitable if the proposed product or service displays the following characteristics:

1. The product or service is modular (e.g., single unit of equipment such as a telephone set or a typical configuration of equipment such as a PBX).

2. Costs are linear with demand. In other words, the per unit costs of a telephone set developed in the Resource Cost study would be equal to (or greater than) the per unit cost of any number of sets which may actually be expected to be in service.

Glossary of Commonly Used Terms

Activity-Based Costing (ABC) System [système de comptabilité par activités (CPA)]: ABC system classifies the company's operating expenses by activity. The mapping of expenses to activities allows for the classification of operating expenses by service or expense category.

After-Tax Weighted Average Cost of Capital (ATWACC) [coût du capital à moyenne pondérée après impôt (CCMPAI)]: ATWACC reflects a weighted average cost of equity and after-tax cost of debt. The ATWACC is used as the discount rate in economic studies to express cash flows occurring at different times in equivalent amount.

Allowable Deductions [déductions admissibles]: Tax shields permitted under the Income Tax Act to offset revenues in deriving taxable income.

Alternate Plan [plan projeté]: Any one of the proposed courses of action outlined in an economic study. The Alternate Plan is the plan to which the Reference Plan is compared.

Amortization [amortissement]: For economic study purposes, a process of converting a lump sum first cost into annual costs covering return and repayment.

Annual Equivalent Cost (AEC) [coût annuel équivalent (CAÉ)]: Levelized annual costs equivalent in time value to the present worth of annual costs (PWAC). An AEC can either represent the unit cost for a capital item developed using the AEC method, in which case AEC is annualized over the life estimate, or it can represent a study result, in which case AEC is annualized over the study period. Since AEC is derived from PWAC, it can be computed for capital costs and/or expense costs.

Annual Resource Cost (ARC) [coût annuel des ressources (CAR)]: Annual Resource Cost (ARC) is determined by amortizing the capital cost over the useful life of the equipment.

Annuity [annuité]: A series of uniform amounts of money occurring annually.

Asset [élément d'actif]: Any factor, tangible or otherwise, owned by the company, and having economic significance. Examples are plant and equipment.

Average Service Life (ASL) [durée de vie moyenne (DVM)]: A particular depreciation-category life determined in annual depreciation studies that is a function of past realized life plus an estimate of the surviving investment in the category.

Bad Debt [coût des créances irrécouvrables]: An estimate of the amount of revenue from sales that is uncollectible.

Business and Property Taxes [taxes d'affaires et impôts fonciers]: Taxes related to real estate properties (land and buildings). The taxes paid are based on an assessment of the real estate value.

Capacity Cost Method [méthode de calcul des coûts de capacité]: A procedure for estimating the causal cost of using a portion of new or existing plant that is both fungible and shared. The capacity cost method is used as a means of estimating cost of advancement.

Capital Cash Flow [flux monétaire des coûts en immobilisations]: Cash flows associated with investment, gross salvage, and cost of removal.

Capital Cost Allowance (CCA) [allocation du coût en immobilisations (ACI)]: A capital tax shield permitted under the Income Tax Act. CCA is claimed by applying a CCA rate to the undepreciated capital cost of an item which is capitalized for tax purposes. Items are grouped into CCA tax classes for which the same CCA rate applies. CCA is used in calculating income tax payable.

Capital Increase Factor (CIF) [facteur d'augmentation des coûts en immobilisations (FACI)]: Forecasts of annual average year-over-year price level changes for capital equipment. The cost of a capital component in today's dollars is multiplied by the CIF to give the capital cost in some future year.

Capital Structure [structure financière]: The proportionate relationship between the book value of the firm's outstanding debt and shareholder's equity. This relationship is described in terms of the debt ratio, which is the ratio of book value of debt to the book value of total obligations comprising debt plus equity (shareholder's equity).

Capitalized Costs [coûts capitalisés]: Any expenditure that is capitalized for book purposes, in which case depreciation expense is claimed as a tax shield.

Cash Flow [flux monétaire]: The real flow of money paid into or out of the company, excluding return and repayment of capital. The six basic cash flows in an economic study are income tax payable, capital expenditures, gross salvage, removal costs, revenues and expenses.

Causality [causalité]: The concept that all costs/revenues that vary as a result of a proposed course of action are relevant for economic study purposes. Since only future costs and revenues can be affected by a proposed course of action, only the future revenues and costs caused by a proposed course of action are relevant for economic study purposes.

CCS [CCS]: A unit measure of communications traffic volume. One CCS is equivalent to 100 call seconds. A busy hour CCS is a CCS occurring during the busy hour.

Circuit [circuit]: A transmission path between two or more points.

Common Costs [coûts communs]: Costs shared by several products or services.

Compensatory [compensatoire]: A service is compensatory when the future flow of all revenues from that service recovers the future flow of all causal costs associated with that service.

Continuous Cash Flow [flux monétaire continu]: Cash flows that are so frequent (at least four times per year) that they have the aspect of being a continuous stream.

Continuous Compounding [capitalisation continue]: Compounding applied on a continuous time basis – in effect, the number of compounding periods approaches infinity. The nominal annual cost of capital (j) is used for continuous compounding.

Contract Period [durée du contrat]: The time period of an agreement between the company and a customer for the provision of a company service.

Contribution [marge contributive]: The amount by which revenues exceed costs.

Cost of Advancement [coût de devancement]: The causally related cost associated with the use of existing spare capacity for a proposal (i.e. the cost arising because the use of spare capacity advances the timing of future facility relief requirements and/or the size of facility additions when relief occurs).

Cost of Capital [coût du capital]: Forward-looking estimate that represents investors' expectations of return on capital used by the company. It is used as a discount rate in economic studies to express cash flows occurring at different times in equivalent amounts. It is computed as the average of the cost of debt and cost of equity weighted by their respective proportions in the company's target book value capital structure. (Also referred to as cost of money, current cost of capital, discount rate and composite cost of capital).

Cost of Debt [coût de l'endettement]: An estimate of the current and foreseeable cost of debt financing.

Cost of Equity [coût du capital-actions]: An estimate of the current and foreseeable rate of return required by equity holders on their investment in the company.

Cost of Money [loyer de l'argent]: (See Cost of Capital)

Cost Recovery [récupération des coûts]: That part of the rate-setting strategy that determines how the costs caused by a proposed course of action should be recovered through rates charged to customers.

Cost-Effectiveness [équilibre coûts-avantages]: Cost-effectiveness requires that to the extent possible, the effort, detail, and cost of an undertaking shall be commensurate with the significance and benefit to be derived from the undertaking.

Costing [établissement des coûts]: The identification of causally related costs of a proposal, based on economic costing principles, for the purpose of evaluating the proposal. Causally related costs are those costs that vary as a result of a proposed course of action.

Costing Unit [unité de calcul des coûts]: An activity or facility for which a unit cost can be developed.

Cross-Effect [effets croisés]: The effect that the introduction of a new product/service, or the discontinuation of an existing product/service, has on the economic viability of other existing products/services.

Current Cost of Capital [coût actuel du capital]: (See Cost of Capital)

Debt Interest (DI) [intérêt sur l'endettement (ID)]: The interest that the company pays to its debt holders each year. The calculation of DI is based on the portion of the project's average remaining capital balance that is financed by debt, at the company's cost of debt.

Debt Ratio [ratio d'endettement]: The target ratio of book value of debt to the book value of debt and equity.

Dedicated Resources [ressources spécialisées]: Those resources (usually plant items) that are assigned to a particular type of service or customer.

Demand [demande]: Generally, a measure of the quantity of a service/product that consumers would purchase under a particular set of circumstances.

Demand Analysis [analyse de la demande]: The estimation of type, quantity, time frame and under what conditions (such as price, price of substitutes or complement, incomes, taste, knowledge, etc.) products or services are or might be desired by consumers or by industry.

Demand Sensitivity Analysis [analyse de sensibilité à la demande]: Analysis that tests the sensitivity of the study results to variations in the forecast level of demand, or growth rate of demand, at a given price level.

Demographic Characteristics [caractéristiques démographiques]: Statistical information related to population, geography, occupational and educational characteristics, and other vital statistics of a market segment.

Depreciation [dépréciation]: The expiration or consumption, in whole or in part, of service life or utility of property resulting from the action of one or more forces operating to bring about the retirement of the property from service. The forces include wear and tear, decay, action of the elements, inadequacy, obsolescence and public requirements.

Depreciation Category [catégorie d'amortissement]: A group of units that perform similar functions, have the same general characteristics, and are subject to similar factors influencing their lives. The depreciation categories are used to develop depreciation rates.

Development Costs [coûts de développement]: Costs incurred in developing a new product or service. They include relevant development costs incurred as a result of activities such as product testing, market testing, economic evaluation studies and training of personnel prior to offering the service.

Direct Costs [coûts directs]: Defined by the CRTC in Telecom Decision CRTC 79-16 as those costs incurred for the provision of a service, which are estimated by multiplying the estimated direct resources by a unit cost.

Direct Resources [ressources directes]: Defined by the CRTC in Telecom Decision CRTC 79-16 as those resources required for the provision of a service that can be identified and quantified readily.

Discount Rate [taux d'actualisation]: (See Cost of Capital)

Discounted Cash Flow (DCF) [actualisation de flux monétaires (AFM)]: A technique that introduces the concept of the Time Value of Money into the measurement of the profitability of proposed capital investments.

Discounted Service Potential (DSP) Method [méthode de l'actualisation du potentiel de service (APS)]: Method used to compute the terminal value in an economic study by discounting, to the end of the study period, the remaining service benefits of the facilities that are expected to occur beyond the end of the study period.

Discounting [actualisation]: The procedure for converting an amount of money at a given point in time to an economically equivalent amount at a different point in time.

Discrete Cash Flow [flux monétaire non récurrent]: Cash flow that occurs as lump sums at any point within a period.

Economic Evaluators [indices de rentabilité économique]: Economic evaluators are summary evaluators that provide a measure of the expected economic attractiveness of a proposed undertaking. They consider the effect of all cash flows causally related to the project, and take into account the time value of money.

Economic Study [étude économique]: A framework for comparing alternative courses of action in order to determine the one that is the most attractive from an economic point of view.

Expense Cash Flow [flux monétaires des dépenses d'exploitation]: A cash out flow related to the cost of doing business, such as the cost of maintaining a facility or repairing or re-arranging a facility.

Expense Increase Factor (EIF) [facteur d'augmentation des dépenses d'exploitation (FADE)]: Forecasts of annual average year-over-year price level changes associated with operating expenses. The cost of an expense in today's dollars is multiplied by the EIF to give the expense in some future years.

Fixed Common Costs/Resources (FCC) [coûts communs fixes (CCF) ou ressources communes fixes]: Those costs/resources that are not expected to change as a result of implementing the proposed course of action. This includes development costs that have been incurred prior to the study.

Floor Price [prix minimum; prix plancher]: The floor is the minimum selling price, i.e., the price at which the company will recover all its causal costs.

Fungible [fongible]: A measure of the extent to which a particular facility that is currently intended to be used or is being used for one purpose can be transferred to an alternate use. The facility is fungible if, at the time of the study, there is a use for the facility in the company outside the project being studied. The essential criterion for fungible facility is that its use in a project will cause or advance the purchase of an additional new facility for other company projects; or alternatively, its liberation from a project will either save or delay the purchase of a new facility.

Future Worth [valeur future]: An amount at some moment in the future that is equivalent to some amount occurring at some moment earlier.

General Tariff [tarif général]: A general tariff is a publication that specifies the rates, terms and conditions on which a Canadian carrier provides a regulated telecommunication service.

Gross Salvage [valeur de récupération brute]: The inward cash flow resulting from the disposition of a capital asset outside the company.

Growth Costs/Growth Technology Costs [coûts liés au progrès technologique]: Forward-looking costs associated with the expansion of the network utilizing a mix of technology that is currently growing.

Imputation Test [test d'imputation]: A regulatory economic study that assesses the present worth of the revenues against the present worth of the costs of the service, where costs of certain underlying functionalities are determined by imputing the applicable tariffed rates.

Income Tax End Effects [impôts résiduels sur le revenu en fin de période d'étude]: A cash flow impact calculated to reflect the income taxes to be paid beyond the end of the study period.

Income Tax Payable (ITP) [impôt sur le revenu à payer (IRP)]: The income tax cash flow, payable to the Government of Canada, calculated by applying the income tax rate to the company's taxable income. CCA is used as a tax shield in the calculation of ITP.

Income Tax Rate (t) [taux d'imposition du revenu (t)]: The rate legislated by the government to be applied to the portion of the company's revenues that is subject to income tax. In economic studies, a rate is used that represents an estimate of the long-term rate for all prospective income taxes paid by the company.

Indirect Costs [coûts indirects]: Defined by the CRTC in Telecom Decision CRTC 79-16 as costs that can reasonably be estimated as loadings on the costs of direct resources.

Indirect Resources [ressources indirectes]: Defined by the CRTC in Telecom Decision CRTC 79-16 as those resources that are required in support of direct resources for the provision of a service.

Inflation [inflation]: An increase in the price level over a period of time.

Introductory Costs [coûts de lancement]: The costs that are not directly assignable to the provisioning of demand and are incurred after a final decision to offer a product/service has been made. Examples are methods development, initial advertising and promotion, etc.

Investment [investissement]: The outward cash flow for the acquisition of a plant or property item. This cash flow normally includes the cost of material, material handling costs and the related installation and engineering costs.

Inward Movement [branchement]: A measure of the additions to service installations over a given period of time reflecting the number of new service installations and the number of service installations relocated to a different address.

Labour Unit Cost (LUC) [coût unitaire de la main-d'œuvre (CUM)]: The hourly cost of human resources involved in the performance of a particular function.

Lease [bail]: A contractual arrangement whereby one party (lessee) acquires the right to use an asset or service owned by another party (lessor) for a specified period of time in return for periodic payments.

Life Estimate (LE) [durée de vie estimative (DVE)]: The period of time over which a plant item in a particular project is expected to be used by the company. While both average service life (ASL) and LE are estimates of the future life expectancy of plant items, they are not necessarily equal. Life estimates are used in economic studies to determine the appropriate period over which these expenses are to be charged. The chosen life estimate involves consideration of the analysis of past retirement data for similar properties, technological progress and economic trends.

Location Life [durée de vie au lieu d'installation]: The period from the time a plant item is placed in service at one location until it is removed from that location.

Maintenance Costs [frais d'entretien]: The costs of keeping equipment and plant in satisfactory operating condition to achieve a specific quality of service.

Marginal Cost Pricing [établissement des prix au coût marginal]: A pricing principle that asserts that the price of a commodity or service should be set equal to the cost of producing the last unit of the commodity or service.

Marginal Costs [coût marginal]: The cost of producing/supplying one additional unit.

Marginal Revenue [revenus marginaux]: The additional revenue generated from supplying one more unit.

Mark-up [supplément]: (See Contribution)

Material Cost [coût d'acquisition]: The amount paid by the company to the equipment supplier. This amount reflects supplier price plus freight charges, provincial sales tax, duties and volume discounts, if applicable.

Miscellaneous Taxes [impôts divers]: Comprised of capital-related miscellaneous taxes and revenue-related miscellaneous taxes.

Motor Vehicle Unit Cost [coût unitaire des véhicules automobiles]: The productive hourly motor vehicle unit cost of motorized plant labour classes. It includes both running expenses (e.g. oil, gasoline) and non-running expenses (e.g. capital cost of the vehicle).

Mutually Exclusive Alternatives [choix mutuellement exclusifs]: Alternatives are mutually exclusive if the selection of one precludes the choice of any of the others.

Net Book Value (NBV) [valeur comptable nette (VCN)]: The undepreciated capital balance of a facility at any period in time (NBV = First cost – Accumulated Depreciation Accruals).

Net Present Value (NPV) [valeur actualisée nette (VAN)]: An evaluator that provides a measure of the incremental effect of the wealth of the company of all future cash flows causally related to the course of action under study. A project's NPV is defined as the sum of the present worth of all cash inflows less the sum of the present worth of all cash outflows discounted at the company's cost of capital.

Net Present Value (NPV) Study [étude de la valeur actualisée nette (VAN)]: A full economic study that calculates NPV in order to provide incremental economic assessments of alternative courses of action.

Nominal Annual Cost of Capital (j) [coût annuel nominal du capital (j)]: The discount rate used in economic studies for continuous compounding. (j = 1n [1 + i])

Non-Fungible [non fongible]: Non fungible facilities are those that have no use in the company other than in the project being studied.

Non-Rectangular Survivor Curve [courbe de survie non rectangulaire]: A survivor curve that indicates that all plant is not retired at the same time (i.e. dispersion is taken into account).

Obsolesence [obsolescence; désuétude]: The process or condition of becoming of a kind or style that is no longer current.

Opportunity Cost [coût d'opportunité]: The imputed cost of the best opportunity foregone, when a specific resource is used for a specific purpose. i.e. opportunity cost represents the benefits that could be obtained by using the resource in the company's next best alternative.

Outward Movement [débranchements]: A measure of the service installations terminated over a given period of time, reflecting the number of disconnections (where service is terminated and billing discontinued) and the number of service installations relocated to a different address.

Plant in Service (PIS) [installations en service (IES)]: The unretired capital expenditure at a point in time. It is calculated for a particular period by summing all the capital still in service (using book cost) at a particular point in time.

Portfolio Expenses [dépenses de portfolio]: Expenses that are directly related to a common group of services, but which cannot be attributed to any specific service within that group (e.g. the development and management of sales/marketing/promotional programs associated with a common group of services).

Pre-Introductory Costs [coûts préalables au lancement du service]: Costs incurred in the development of a service under study prior to the final decision to offer the service. These costs include components such as production development, marketing evaluations, the costs associated with conducting an economic study, etc. Since the occurrence of these costs is not affected by the final decision to offer the service, these costs are classified as sunk and therefore are not causal to the economic evaluation.

Present Worth of Annual Costs (PWAC) [valeur actualisée des coûts annuels (VACA)]: An economic evaluator defined as the present worth of annual costs causally related to an alternative and including the annual cost of taxes. Since income tax and revenue-related miscellaneous tax are functions of revenue, the calculation of these taxes in PWAC is based on the assumption that revenues will exactly cover all costs including the cost of taxes.

Present Worth of Capital Expenditures (PWCE) [valeur actualisée des dépenses en immobilisations (VADI)]: The present worth of a series of future capital expenditures causally related to an alternative.

Present Worth of Demand (PWOD) [valeur actualisée de la demande (VAD)]: An evaluator defined as the present worth of annual demand causally related to an alternative. PWAC may be divided by the PWOD to determine the unit cost, which is the minimum rate required to recover all anticipated costs during the study period.

Productivity Improvement Factor [facteur de productivité]: Forecast of annual year-over-year productivity changes over the study period in recognition of operational processes becoming more efficient over time.

Rating [tarification]: The process of establishing service rates. Rating requires consideration of several, sometimes competing objectives (e.g. to exceed service costs, to satisfy customers, rates for complementary or substitute services etc.).

Rectangular Survivor Curve [courbe de survie rectangulaire]: A survivor curve that indicates that all plant is retired exactly at life expectancy.

Reference Plan [plan de référence]: A term used in an economic study to describe the alternative that serves as a benchmark against which all other alternatives are compared. Generally, the "not to introduce" alternative is used as the reference plan. The reference plan provides a reference point from which to measure the incremental effects of all other alternatives on the wealth of the company.

Remaining Capital Balance (RCB) [solde de capital réel (SCR)]: The outstanding capital obligation of the company at any point in time. It is the original capital investment less accumulated depreciation, less accumulated deferred tax/revenue credits.

Removal Cost [coût de retrait]: Cash outflow resulting from removing a capital item at the end of its useful life.

Repayment of Capital [remboursement du capital]: Process by which the initial investment is repaid through depreciation and deferred tax credits. It is not a cash flow.

Replacement Capital [coût en immobilisations de remplacement]: Capital that would be required to maintain the increment in capital at a constant level from year, t, to the end of the life estimate. It is the capital required to replace the portion that has been retired according to the survivor curve.

Replacement Cost New [coût de remplacement à l'état neuf]: The replacement cost of a resource is the estimated cost of replacing the existing resource by the most appropriate equivalent (not necessarily the existing configuration) of equal capacity and type of plant. It is a method of estimating the current cost new.

Resource Cost Study [étude du coût des ressources]: An economic study used to determine the annual equivalent costs (or resource cost) of provisioning for demand growth. It includes a number of simplifying assumptions that result in a less costly study.

Revenue [revenus]: Income generated in exchange for the company's output. For a single project, the revenue is the cash inflow caused by the project.

Sensitivity Analysis [analyse de sensibilité]: The process of subtituting different values for the estimates used in an economic study in order to measure, quantitatively, the impact of such changes on the study results.

Shared Facility [installation partagée]: Facilities that are engineered and sized to be used simultaneously by a number of different users or services.

Straight-Line Depreciation [amortissement linéaire]: A method whereby the original cost or other recorded value of a fixed asset is allocated to expense at a constant rate over its service life.

Study Period [période d'étude; période visée par l'étude]: The period of time over which the significant causal revenue and cost-related cash flows are estimated in order to determine the economic impact of a proposed alternative.

Study Results [résultats de l'étude]: Comprised of economic evaluators and accounting indicators.

Sunk Costs [coûts irrécupérables]: Costs already irretrievably incurred and that can no longer be avoided. Sunk costs are not included in economic studies.

Survivor Curve [courbe de survie]: A mathematical function that, together with the life estimate, predicts the retirement pattern of a group of capital items.

Target Debt Ratio [ratio d'endettement visé]: The ratio of debt to debt and equity that represents the company's long-term view of a target capital structure.

Taxable Income [revenu imposable]: The amount to which the income tax rate is applied in computing income tax. It is generally computed in any year as revenues received less all allowable deductions for that year.

Terminal Value [valeur finale]: Value computed at the end of the study period to reflect future benefits expected to be derived from plant that continues in service beyond the end of the study period.

Time Value of Money [valeur temporelle de l'argent]: The concept that an item of money has a full range of equivalent and potential values, although it can have actual existence and value at only one point in time. Therefore, an item of money must be identified in terms of time as well as amount. Various amounts of money may be translated to equivalent amounts as of a common date. The cost of capital represents the time value of money.

Traffic [trafic]: The volume of calls, messages, etc. transmitted during a given period.

Type 1 CSA [AP de type 1]: A customer-specific arrangement (CSA) that provides an arrangement of facilities and/or equipment that is specifically designed to meet an individual customer's need and that is not covered by the general tariff.

Type 2 CSA [AP de type 2]: A customer-specific arrangement (CSA) that provides a bundle of services tailored to a particular customer's needs, primarily involving elements available from the general tariff, where the purpose is to customize the offering in terms of rate structure or levels.

Undepreciated Capital Costs [coût en immobilisations non amorti]: That part of the original investment that has not already been claimed as CCA and that, except for salvage, diminishes each year by the amount of CCA claimed in that year.

Unit Costs [coût unitaire]: The total cost associated with a particular volume of output divided by the number of units produced.

Variable Common Cost Factor (VCCF) [facteur de coûts communs variables (FCCV)]: The factor applied to certain capital and expense cash flows to estimate variable common costs.

Variable Common Costs/Resources (VCC) [coûts communs variables (CCV) ou ressources communes variables]: Those costs/resources which are deemed to vary with either the growth or decline in all services, and whose link to any specific service is tenuous. An assigned portion of the company's total variable common costs is to be included as a causal cash flow in the economic study.

Warehouse Cost [coût d'entreposage]: The general cost incurred in the acquisition, storage, handling and investment in new material and material returned to the warehouse. It includes costs for items such as transportation, packaging materials, brokerage, salaries and salary related costs for personnel involved in these functions.

Working Fill Factor (WFF) [facteur d'utilisation (FU)]: The ratio of service-producing capacity to the total installed capacity of the facility. The factor is used in the capacity cost method to attribute the cost of non-service-producing capacity (e.g. defective units, spare capacity) to the per-unit cost of the facility.