1   Q.   Provide an electronic copy of the cost of service study with formulas included

2   and user documentation (Cost of Service evidence, Exhibit RDG-1).

3

4

5   A.   The electronic copy of the cost of service study, Exhibit RDG-1, is provided

6   on the enclosed diskette in the file labeled NP110.COS2004F.May2003.zip.

7   The user documentation is also included on the diskette in the file labeled

8   NP-110 COS User Guide.doc.

9

10   A hard copy of the user documentation is attached.

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The COS Model is comprised of five files as follows:

1.   COS.xls (Main model)
2.   Load2004B.xls (Load data, along with rural revenue data)
3.   Oam2004.xls (Revenue requirement components)
4.   Plant2004F.Jan2003.xls (Plant Original Cost, Net Book Value and Depreciation data)
5.   PriorYrRevAlloc.xls (Prior year revenues for the Municipal Tax and PUB Assessment allocation.

The COS.xls file contains the calculations relevant to the production of the COS schedules filed in this proceeding. The remaining files contain the requisite input data.

General Flow of the COS Model

Newfoundland and Labrador Hydro maintains its accounting data by business unit, or cost center. Plant data are, for the most part, identified by system and function. At the point that accounting and plant data enter the COS model, they have been compiled and identified, to the extent possible, by appropriate system, function and sub-function. If the system and/or function are not readily identifiable, the cost of service model allocates the appropriate amounts. Load allocation data are provided for each rate class.

Cost of Service amounts are compiled by system, and identified in the model as such. Costs by system are functionalized and classified within the system sheets, into demand, energy, and customer amounts, for the production, transmission and distribution functions. Revenue-related items (Municipal Tax and PUB Assessment) are identified separately.

The revenue requirement, before return on rate base, is then calculated for each system. Return on rate base is comprised of both a return on equity and a return on debt. Rural rate base is excluded from the calculation of the return on equity component. Return on debt is calculated on total rate base. Total revenue requirement, after return on rate base, is then allocated to classes of customers in the following manner:

Functional Classification	**Allocation Basis**
Production Demand	Coincident Peak (1CP)
Production Energy	MWh at production
Transmission Demand	Coincident Peak (1CP)
Rural Transmission Demand	Coincident Peak (1CP)
Distribution Demand	Coincident Peak (1CP)
Distribution Customers	Customers, weighted customers
Revenue-Related	Prior year revenues

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Following the allocation of total revenue requirement to rate classes, the total demand, energy and customer costs for each rate class are determined. Revenue-related items are re-classified to demand, energy, and customer amounts based on rate class revenue requirement excluding revenue-related items. Unit costs are then calculated as follows:

Demand costs - Demand	$ per kW
Demand costs - Non-demand	$ per kWh
Energy costs	$ per kWh
Non-demand Demand and Energy	$ per kWh
Customer costs	$ per bill

The amount of the Island Industrial Non-firm Revenue Credit is calculated and allocated to firm customers on the Island Interconnected system.

The CFB-Goose Base Secondary Revenue Credit is calculated. A percentage of the credit is applied to reduce the rural deficit. The remaining credit is allocated to firm customers on the Labrador Interconnected system.

The rural deficit (net of the deficit reduction for the percentage of CFB-Goose Bay Revenue Credit) is allocated to the following customers:

Newfoundland Power
Rural Labrador Interconnected

COS.xls

Worksheet Contents

Several of the worksheets, e.g. Revisions, Balance and Index, are designed to check the results of the calculations or aid the user. This document describes those sheets relevant to the production of the filed COS schedules only.

1. Run Options

   This worksheet identifies the input files linked to the model (automated by the print macro) and permits the user to set certain run options. Specifically, there are four inputs defined on this worksheet:

   a) Test Year Switch: This switch provides the capability to run the model on a test year basis, or on a fallout year basis. When the value of the switch changes, the calculations are automated with a macro. The model differences between a test year and a fallout year are as follows:

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Test Year (Value of 1): Return on equity is an input percentage. The return on equity for Hydro's non-regulated industrial customer (IOCC) is derived from this percentage, and is used to calculate IOCC's revenue requirement.

Fallout Year (Value of 0): Return on equity is a calculated value derived from regulated revenues minus expenses minus return on debt. The portion of regulated revenues related to IOCC is determined through an iteration process which matches the calculated return on equity percent with the return on equity percent used for IOCC's revenue requirement.

b) Rural Island Interconnected Margin Switch: Determines whether or not the return on equity is applicable to the entire Island Interconnected rate base or just a portion thereof.

c) GNP Generation Switch: Allows the user to determine whether GNP generation costs are allocated to Rural customers, or are treated as Common.

d) Revenue Cr Applied to Deficit: Percentage of the CFB-Goose Bay Revenue Credit to be applied as a reduction to the rural deficit.

This worksheet also allows the user to enter a name for the particular COS version being worked on. This name appears as part of the title of each schedule.

2. Summaries: The worksheets in this section of the model present summary COS results.

a) Revenue Requirement: This worksheet contains Schedule 1.1, page 1, Total System Revenue Requirement. It presents the detailed revenue requirement for each of the 5 systems being analyzed as well as the system as a whole.

b) Rate Base: This worksheet contains Schedule 1.1, page 2, Total Rate Base by System.

c) Revenue to Cost: Schedule 1.2, Comparison of Revenue and Allocated Revenue Requirement compares revenue and allocated revenue requirement by rate class for the total system as well as each of the 5 systems being analyzed.

Schedule 1.2.1, Rural Deficit Allocation, details the rural deficit allocation.

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d) Unit Costs

Schedule 1.3, Unit Demand, Energy and Customer Amounts, presents the unit demand, energy and customer amounts by rate class for each of the 5 systems, and isolated systems combined. The results are presented both before and after the deficit allocation.

Schedule 1.3.1, Total Demand, Energy and Customer Amounts, presents the total demand, energy and customer amounts by rate class for each of the 5 systems, and isolated systems combined. As with Schedule 1.3, the results are presented both before and after the deficit allocation.

Schedule 1.3.2, Demands, Sales and Number of Bills, shows billing demands, sales and number of bills by rate class for each of the 5 systems, and isolated systems combined.

Schedule 1.4 is the Calculation of Firming Up Charge for the Island Interconnected System.

Schedule 1.5 is the Calculation of Transmission Wheeling Charge for the Island Interconnected System.

3. <u>Functional Classification and Allocation Schedules</u>: There is a separate worksheet for each system containing the functionalization, classification and allocation schedules as follows:

Schedule 2.1 – Functional Classification of Revenue Requirement
Schedule 2.2 – Functional Classification of Plant in Service for the Allocation of O&M Expense
Schedule 2.3 – Functional Classification of Net Book Value
Schedule 2.4 – Functional Classification of Operating & Maintenance Expense
Schedule 2.5 – Functional Classification of Depreciation Expense
Schedule 2.6 – Functional Classification of Rate Base
Schedule 3.1 – Basis of Allocation to Classes of Service
Schedule 3.2 – Allocation of Functionalized Amounts to Classes of Service
Schedule 3.3 – Allocation of Specifically Assigned Amounts to Classes of Service (Island Interconnected only)

Schedules 2.1, 2.2, 2.4 and 2.6 have a corresponding documentation schedule detailing the basis of the functional classification. The documentation schedules are located to the right of the main schedule.

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4. Other Schedules: This group of worksheets contains additional COS calculations.

    a) Schedule 4.1: This worksheet contains Schedule 4.1, Functionalization and Classification Ratios.

    b) Schedule 4.2,4.3,4.4: Three schedules are presented on this worksheet. They are Schedule 4.2, System Load Factors, Schedule 4.3, Holyrood Capacity Factor and Schedule 4.4, Total System Power Purchases.

5. Backup Schedules: The worksheets in this section of the model contain supporting calculations, but the schedules are not part of the published COS.

    a) AED: Calculation of the Generation AED Factors is presented for each of the five systems. These calculations are no longer used.

    b) AllocPlt, AllocNBV, AllocDEP and AllocMisc: These worksheets contain additional allocation factors, derived from data on other COS worksheets, to allocate O&M data.

        In addition, the AllocNBV sheet includes the calculation of allocated interest and margin.

    c) Average Costs: Average costs per kWh are shown for the total system as well as for each of the 5 systems.

    d) Coverage: This worksheet calculates regulated gross interest coverage.

    e) Customers: This worksheet contains calculations for weighted customers.

    f) DistnDetails: This worksheet calculates the functionalization ratios for distribution plant by system.

    g) O&M Summary: The final allocations of the O&M data are made on this worksheet prior to inclusion in the COS system schedules, e.g. IslIntCos.

    h) SpecAssFuel: This worksheet details the amount of specifically assigned fuel for Island Interconnected. For the test year, this schedule is not used.

    i) SPLT Details, SNBV Details and SDEP Details: These worksheets are used to functionalize some items of the plant data prior to use on the COS sheets, e.g. IslIntCos.

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j) SystemizedPlant: This worksheet contains supplemental plant allocations for meters, computer software, and Hydro Place.

Printing the COS Schedules

A print routine is included on the COS.xls file. The schedules may be printed from any location in the workbook by pressing CTRL-T. A print menu allows the user to choose from the following options:

(1) Print the full cost of service, or
(2) Print one or more of the following:
      (i)   Summaries
      (ii)   Island Interconnected
      (iii)   Island Isolated
      (iv)   Labrador Isolated
      (v)   L'Anse au Loup
      (vi)   Labrador Interconnected
      (vii) Other
      (viii) Backup Schedules

Each printed sheet includes the date and number of pages. An optional run label can be entered by the user and appears in the lower right-hand corner of each output sheet.